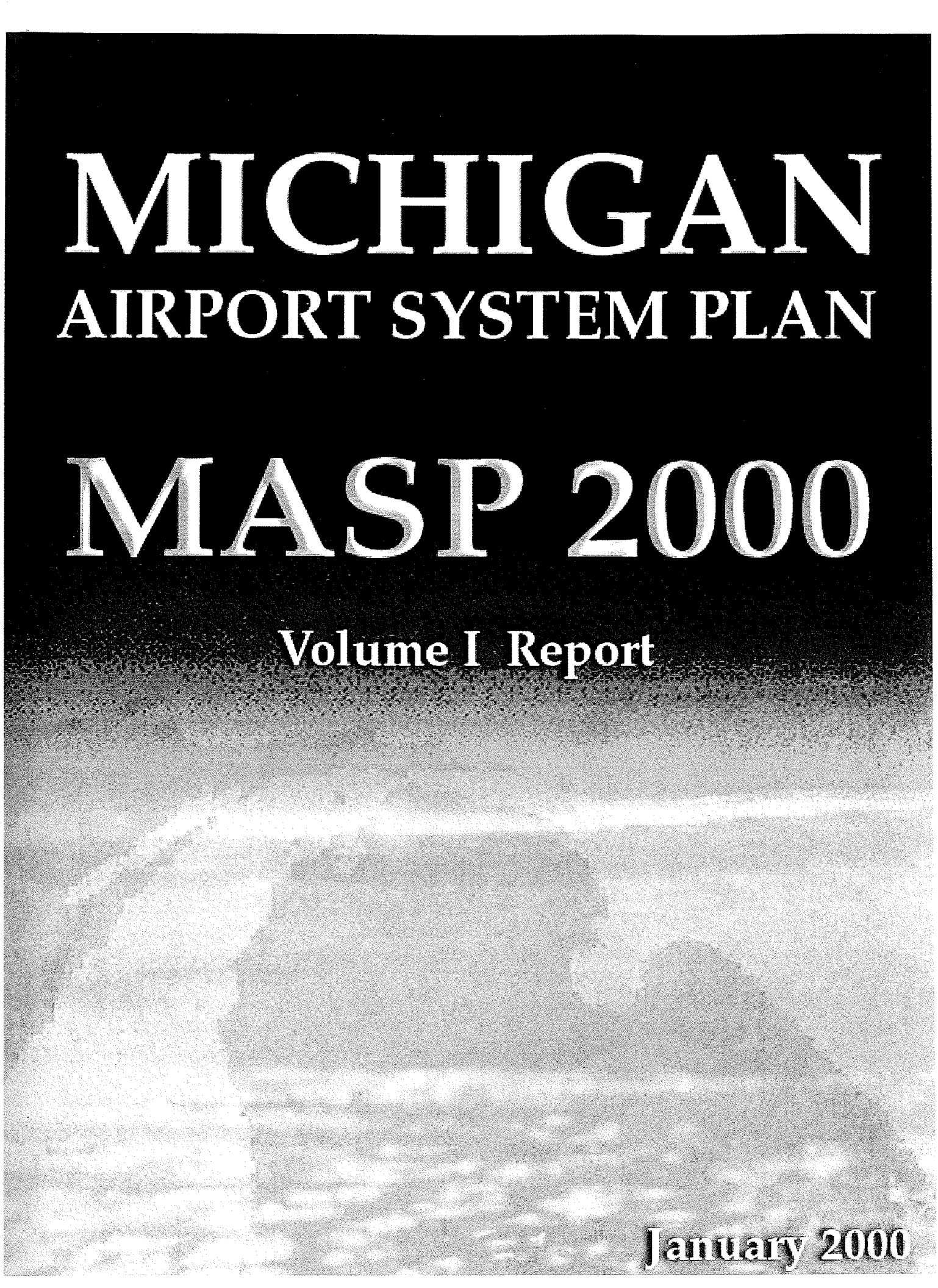
MICHIGAN
AIRPORT SYSTEM PLAN

MASP 2000

Volume I Report



January 2000

MICHIGAN AIRPORT SYSTEM PLAN REPORT

MASP 2000

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Adopted by the MICHIGAN AERONAUTICS COMMISSION January 20, 2000	
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Executive Summary

EXECUTIVE SUMMARY

The Michigan Airport System Plan (MASP 2000) documents the planning process that identifies the aviation role of public use airports in Michigan through the year 2020.

MASP 2000 presents the results of a system planning process that has been aligned with the goals and objectives of MDOT's State Long Range Plan. The ***MASP 2000*** supports programming decisions and is useful in evaluating programming actions related to airport system and airport facility deficiencies.

A diverse group of individuals was assembled into a ***MASP 2000*** Steering Committee that provided valuable input and direction over the course of the study. This broad based group included representatives from both within and outside of the aviation community.

There are 236 public use airports in Michigan in 1999. Of this total, 129 or 55 percent are publicly owned, with 107 or 45 percent privately owned. Each airport has been assigned to its appropriate airport classification based on primary runway length and width, and other airport features. Forty-one airports are currently assigned to the "C" or "D" Approach Category meaning that they can accommodate business jet aircraft. An additional 86 airports, designated in Approach Category "B", have paved runways under 5,000 feet in length and can accommodate twin engine or smaller aircraft. The remaining 107 airports, Approach Categoty "A" facilities, have turf runways and, generally, are limited to use by single engine aircraft.

Between 1998 and 2020 based aircraft are projected to grow by 7

percent from 6,914 to 7,397. During this same period total aircraft operations will grow by 29 percent from 4.4 million to 5.6 million.

Among the key functions of the ***MASP 2000*** is, from a state perspective, identifying those airports that can best respond to state goals and objectives. To this end, all airports, following a rigorous analytical process, were assigned to one of three tiers based on their contribution to state goals. Tier 1 airports respond to critical/essential state airport system goals. These airports should be developed to their full and appropriate level. Tier 2 airports complement the essential/critical state airport system and/or respond to local community needs. Focus at these airports should be on maintaining infrastructure with a lesser emphasis on facility expansion. Tier 3 airports duplicate services provided by other airports and/or respond to specific needs of individuals and/or small businesses.

A series of system goals were identified as an outcome of an issue identification process related to the *State Long Range Plan*. The system goals identified were...

- Airports should serve significant population centers
- Airports should serve significant business centers
- Airports should serve significant tourism/convention centers
- Airports should provide access to the general population
- Airports should provide adequate land area coverage
- Airports should provide adequate regional capacity, and
- Airports should serve seasonally isolated areas.

Each of these system goals was subjected to a rigorous analytical process that resulted in the establishment of system standards and the designation of airports for inclusion in either Tier 1 or Tier 2. Airports not designated to either Tier 1 or Tier 2 were assigned, by default, to Tier 3.

The following table summarizes the system standards and indicated the number of airports included in Tier 1 and Tier 2 for each system goal. A number of airports respond to more than one system goal.

Composite Alternative Summary					
System Goal	Apt Class	Service Area	Service Goal	Tier 1	Tier 2
Population Centers	C-II	30 min	95%	32	10
Business Centers	C-II	30 min	95%	35	15
Tourism Centers	B-II	30 min	95%	39	10
General Population Access	B-II	45 min	95%	28	4
Land Area Coverage	B-I	30 miles	95%	50	0
Regional Capacity	B-I	na	125%	65	16
Isolation	B-I	na	100%	7	0
Overall				88	25

In addition to establishing system goals, a series of facility goals were developed that identify the basic components of an airport. These facility goals are specific for each airport classification. Facility goals are...

- Primary runway system
- Pavement condition
- All weather access
- Year round access
- Basic pilot and aircraft services
- Airport zoning
- Navigational aids
- Instrument approaches
- Surface Access

All airports were evaluated to determine whether they currently meet each facility standard, and the extent and cost associated with responding to deficiencies through the year 2020. The following table identifies the number of Tier 1 airports meeting the facility standards.

Number of Airports Meeting Facility Goal Standards							
	System Goal						
Facility Goal	Population Centers	Business Centers	Tourism Centers	General Population	Land Cover	Regional Capacity	Isolation
Number of Tier 1 Airports	32	35	39	28	50	65	7
Primary Runway System	29	25	29	27	42	49	2
Pavement Condition	21	21	22	15	27	36	2
All Weather Access	15	13	16	16	20	21	0
Year Round Access	32	35	37	28	47	65	3
Basic Pilot & Aircraft Serv	29	32	28	24	39	63	1
Airport Zoning	18	18	18	16	23	24	0
Navigational Aids	23	23	22	20	32	39	2
Instrument Approaches	25	20	36	28	41	65	5
Surface Access	10	12	22	25	42	57	2

The cost associated with retiring system deficiencies is $115 million per year. Of this total; $78 million are for deficiencies at air carrier airports; $30 million for Tier 1 general aviation airports; $6 million for Tier 2 airports; and $1 million for Tier 3 airports.

Current funding levels for capital improvements, including federal, state and local resources, total approximately $70 million. Of this total, $55 million are spent at air carrier airports. The remaining $15 million are spent at general aviation airports.

An aviation investment strategy will be developed subsequent to the ***MASP 2000*** to help determine project selection priorities.

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STUDY TEAM

The conduct of the ***Michigan Airport System Plan*** was undertaken under the direction of a multi level team whose support, guidance, and sustained high quality efforts made development of the ***MASP 2000*** possible.

Co-sponsors of the ***MASP 2000*** study effort include MDOT's Chief Administrative Officer, Greg Rosine; the Deputy Director for the Bureau of Aeronautics, Bill Gehman; the Deputy Director for the Bureau of Transportation Planning, Lou Lambert; and the Assistant Deputy Director of the Bureau of Transportation Planning, Susan Mortel.

A diverse and dedicated group of individuals representing a wide variety of organizations both within and outside of the aviation community was assembled into a ***MASP 2000*** Steering Committee that provided valuable input and direction over the course of the study. Members of the ***MASP 2000*** Steering Committee included....

- ☐ Bridgitt Hewitt representing the Southeast Michigan Council of Governments
- ☐ Sue Higgins representing the Michigan 3C Directors
- ☐ Mark Johnson representing the Michigan Association of Airport Executives
- ☐ Lowell Kraft representing the Michigan Aeronautics Commission
- ☐ Jim Opatrny representing the Federal Aviation Administration
- ☐ Matt Skeel representing the Michigan 3C Directors
- ☐ Jim Stingle representing the Michigan Association of Regions
- ☐ Jon Stout representing the Michigan Association of Airport Executives
- ☐ Cody Welch representing the Michigan Aeronautics Commission General Aviation Committee

The third component to the timely and creative development of the

MASP 2000 was the MDOT study team. This group of diverse and talented professionals assembled from the Bureau of Transportation Planning and the Bureau of Aeronautics made the entire effort possible. These individuals include...

...from the Bureau of Aeronautics: Carol Aldrich, Dave Baker, Matt Brinker, Jim Downer, Rick Hammond, Alan Kalis, Pauline Misjak, Mark Noel, John Pierce, Steve Schultz, Ralph Sims, Linn Smith, Mary Kay Trierweiler, and Juan Zapata

...from the Bureau of Transportation Planning: Garth Banninga, Jim Brush, Dave Eggert, Sean Gambrel, Terry Gotts, Cory Johnson, Todd Kauffman, Dave Kiter, Bob Kuehne, Marty Lontz, Paul Lott, Scott Maier, Dick Nellett, and Jacob Tiedt

It is with heartfelt thanks that we acknowledge all of the team members for their contributions to the development of the ***Michigan Airport System Plan.***

Oliver House, AERO
Steve Vertalka, BTP
Co-Project Managers

Introduction

INTRODUCTION

State airport system planning is a process which results in the documentation of airport related facilities necessary to meet current and future air transportation needs of the state. The plan identifies the aeronautical role of existing and recommended new airports. It also describes the development necessary at each, and estimated system costs. State system planning is accomplished within a comprehensive planning framework, consistent with state goals and objectives for economic development and transportation. It provides direction for airport master planning. It also serves as an important component of the Federal Aviation Administration (FAA) National Plan of Integrated Airport Systems (NPIAS).

The purpose of airport system planning, described in its broadest sense, is to determine the extent, type, nature, location, and timing of airport development needed in the state to establish a viable, balanced, and integrated system of airports to provide adequate service to Michigan businesses and residents. The Michigan Airport System Plan (***MASP 2000***) includes the following features...

> ***Goals and measurable objectives*** with respect to airport development and the relationship to Michigan's economic development and transportation infrastructure.
>
> ***Aviation oriented objectives*** regarding the safety and level of service of Michigan's airports.
>
> ***Policy and technical direction*** for airport master planning to be undertaken by individual airport sponsors.
>
> ***Provision of a management and coordinative resource*** to complement and support urban and regional planning.

Support for a continuing airport planning presence, to be drawn on as the need arises, and to assure that planning issues are continually and effectively addressed and that the state plan is a current document.

Michigan has a continuing obligation with the Federal Aviation Administration (FAA) to develop and maintain a current state system plan. This document, ***MASP 2000***, presents the results of this system planning process and has been aligned with the goals and objectives of MDOT's State Long-Range Plan. The ***MASP 2000*** supports programming decisions and is useful in evaluating programming actions related to airport system and airport facility deficiencies.

The Michigan Airport System Plan is contained in a two set volume. This document, the MASP 2000 Report, comprises the first volume and provides a summary of the MASP methodology and findings. Volume II is a technical supplement which provides a detailed description of methodology, historic data, and selection criteria that was used in the formulation of the plan.

System Description

SYSTEM DESCRIPTION

There are three areas which will be examined in regard to the description of the airport system in Michigan. These are...

- ☐ Number and Location of Existing Airport Facilities
- ☐ Airport Classifications
- ☐ Airport Service Areas

Number and Location of Existing Airport Facilities

There are 236 public use airport facilities throughout Michigan in 1999. Not included in the ***MASP 2000*** are private use airfields, seaplane bases, heliports, and military facilities, although joint use public/military facilities are included in the system plan. Of the 236 public use airports, 129 or 54.7 percent are publicly owned with the balance, 107 or 45.3 percent privately owned. Although both types of facilities are open to the public, ownership plays an important role in at least two ways. First, publicly owned airports tend to continue functioning as airports over the long haul with a sense of stability that is important to users of the airports. They are more readily accepted as a community asset. Privately owned airports are far more likely to drift into and out of public use and consequently are less reliable as a long term transportation resource. Additionally, privately owned airports are often under extreme pressure from developers and others for conversion into non aviation uses such as housing or commercial developments. Once converted to another use, the likelihood of replacing one airport with another is remote at best.

Table 1 identifies the number of public use airports in each county by ownership in 1999. Two counties, Baraga and Keweenaw, both located in the upper peninsula, are without public use airports. One

additional county, Missaukee, does not have a public owned airport. Clinton county, with twelve, has more public use airports than any other county.

Map 1
Public Use Airports in Michigan, 1999

Table 1
Public Use Airports by County, 1999

County	Public	Private	Total	County	Public	Private	Total
Alcona	1	0	1	Lake	1	0	1
Alger	2	0	2	Lapeer	1	0	1
Allegan	3	2	5	Leelanau	2	1	3
Alpena	1	1	2	Lenawee	1	5	6
Antrim	2	2	4	Livingston	1	5	6
Arenac	1	0	1	Luce	1	0	1
Baraga	0	0	0	Mackinac	4	0	4
Barry	1	0	1	Macomb	1	2	3
Bay	1	1	2	Manistee	1	0	1
Benzie	2	1	3	Marquette	1	2	3
Berrien	3	1	4	Mason	1	0	1
Branch	1	1	2	Mecosta	2	2	4
Calhoun	2	1	3	Menominee	1	0	1
Cass	1	0	1	Midland	1	0	1
Charlevoix	4	2	6	Missaukee	0	2	2
Cheboygan	2	2	4	Monroe	1	4	5
Chippewa	3	0	3	Montcalm	2	1	3
Clare	2	0	2	Montmorency	2	0	2
Clinton	2	10	12	Muskegon	1	0	1
Crawford	1	0	1	Newaygo	2	1	3
Delta	1	1	2	Oakland	2	1	3
Dickinson	1	0	1	Oceana	1	1	2
Eaton	1	3	4	Ogemaw	1	0	1
Emmet	2	0	2	Ontonagon	1	0	1
Genesee	2	4	6	Osceola	1	1	2
Gladwin	1	0	1	Oscoda	2	1	3
Gogebic	1	0	1	Otsego	1	0	1
Grand Traverse	2	1	3	Ottawa	2	5	7
Gratiot	1	1	2	Presque Isle	2	0	2
Hillsdale	1	0	1	Roscommon	4	0	4
Houghton	2	0	2	Saginaw	3	1	4
Huron	2	2	4	Sanilac	2	4	6
Ingham	1	3	4	Schoolcraft	1	0	1
Ionia	1	0	1	Shiawassee	1	1	2
Iosco	2	1	3	St. Clair	1	7	8
Iron	2	0	2	St. Joseph	2	0	2
Isabella	2	2	4	Tuscola	1	1	2
Jackson	1	4	5	Van Buren	1	1	2
Kalamazoo	1	4	5	Washtenaw	1	4	5
Kalkaska	1	0	1	Wayne	5	0	5
Kent	3	3	6	Wexford	1	1	2
Keweenaw	0	0	0	TOTAL	129	107	236

Airport Classifications

Airports are classified based on the operating and physical characteristics of the aircraft using the airport. The FAA uses an Airport Reference Code (ARC) system that classifies airports by the operational and physical characteristics of the most demanding aircraft intended to operate at the facility. This system has two components -- *approach category* which relates to the operational characteristics of aircraft and *design group* which relates to the physical characteristics of aircraft.

Approach Category

An aircraft approach category is a grouping of aircraft based on 1.3 times their stall speed in their landing configuration at their maximum certified landing weight. This aircraft group must generate or be forecasted to generate at least 500 total annual operations. The highest category of aircraft to meet this standard is established as the critical aircraft at that airport.

Table 2
Approach Category Standards

FAA Approach Category	Approach Speed
A	less than 91 knots
B	91 to 120 knots
C	121 to 140 knots
D	141 to 165 knots
E	166 knots or more

Design Group

Airplane design group is a grouping of airplanes based on wingspan of an airport's critical aircraft. This, in turn, determines the geometrics at an airport. Runway and taxiway widths, apron sizes, turning radii, and other airport physical characteristics are based on design group designation.

Table 3
Design Group Standards

FAA Design Group	Wingspan
I	less than 49 feet
II	49 to 78 feet
III	79 to 117 feet
IV	118 to 170 feet
V	171 feet to 213 feet
VI	214 feet to 261 feet

FAA Common Airport Classification

Airports are commonly classified as utility or transport. The utility category is further subdivided into four categories.

Basic Utility -- Stage I These airports serve approximately 75 percent of the single-engine airplanes used for personal and business purposes. Precision or non-precision Instrument Flight Rules (IFR) approach operations are not usually anticipated. This airport would have an ARC of A-I. In Michigan this category would include all airports with only turf runways.

Basic Utility -- Stage II These airports serve all airplanes of stage I plus high performance single engine aircraft and light twin engine aircraft typically used for business and air-taxi purposes. Precision approach operations are not usually anticipated. This airport would have an ARC of B-I. In Michigan this category would include airports with a paved primary runway up to 3,500 feet in length.

General Utility -- Stage I These airports serve all small airplanes. Non-precision approach operations are usually anticipated. This airport would have an ARC of B-II. In Michigan this category would typically include airports with primary runways between 3,500 and 4,300 feet in length.

General Utility -- Stage II These airports serve large airplanes in approach category C and usually have the capability for precision approach operations. This airport would have an ARC of C-II. In Michigan this category would

typically include airports with primary runways up to 5,000 feet in length.

Transport These airports serve airplanes in approach category C and D. Precision operations could be accommodated at this type of airport. This airport would have an ARC of C-III, C-IV, D-III or D-IV. In Michigan this category would typically include airports with primary runways over 5,000 feet in length.

MASP Airport Classification

For the MASP all airports are classified by approach category and design group of the primary runway. The following summarizes the classification of Michigan's 236 public use airports by approach category-design group and by public or private ownership.

Table 4
Approach Category - Design Group Combinations

Approach Category	Design Group	Runway Length	Runway Surface	NumAirports	
				Pub	Pri
A	I	Less than 2,500 feet	Turf	14	93
B	I	Less than 3,500 feet	Paved	28	14
B	II	3,500 to 4,300 feet	Paved	39	7
C	II	4,300 to 5,000 feet	Paved	14	0
C	III or IV	5,000 feet or more	Paved	7	0
D	III or IV	6,000 feet or more	Paved	20	0

Other approach category-design group combinations are possible. Actual and recommended airport designations are based upon the fleet mix of aircraft currently operating, or forecasted to operate, at a particular airport.

Examples of common aircraft found in each Airport Reference Code (ARC) follow...

- ☐ A-I Beech Bonanza, Cessna 172, Piper Cherokee
- ☐ B-I Cessna 310, Beech Baron, Piper Navajo
- ☐ B-II Beech King Air 200, Cessna Citation II, Dassault Falcon 20
- ☐ C-II Grumman Gulfstream II, Learjet 25 & 55, Hawker

125, Canadair Challenger

☐ C-III Boeing 727 & 737, McDonnell Douglas DC-9

☐ D-III Boeing 747, McDonnell Douglas DC-10, L-1011

MASP Classification and Priorities

The ***MASP 2000,*** from a state perspective, assigns airports to one of three tiers based on an airport's ability to respond to state goals and objectives as described in Chapter 5.

> ***Tier 1 airports*** respond to essential/critical state airport system goals and objectives. These core airports should be developed to their full and appropriate level.
>
> ***Tier 2 airports*** complement the essential/critical state airport system and/or respond to local community needs. Focus at these facilities should be on maintaining infrastructure with a lesser emphasis on facility expansion.
>
> ***Tier 3 airports*** duplicate services provided by other airports and/or respond to specific needs of individuals and/or small businesses. These facilities are secondary to meeting the overall state system goals and only receive minimal safety enhancements such as runway cones and wind socks.

Airport Service Areas

The value of aviation facilities is related to its proximity to population centers, business centers, tourism/convention centers, and other aviation related traffic generators. The closer an airport is located to these areas, the greater its value as a transportation resource. Beyond certain travel thresholds, airports may have a reduced transportation value.

The analytical tool used in alternative development and analysis within ***MASP 2000*** utilizes the Statewide Travel Demand Model used historically for highway analysis within Michigan. This model divides the state into 2,307 Transportation Analysis Zones (TAZ), each generally a township or smaller in size. Each of these zones has a variety of socio-economic data assigned to it including current and forecasted population, employment, etc. Each travel analysis zone is connected to all other zones using the actual highway network with appropriate speeds and travel times. This permits an analysis of travel time between all zones.

Early in the ***MASP 2000*** development all of the public use airports were inserted into the Statewide Model Network. This entailed locating the airports in system, attaching physical and operational characteristics to them, and building a link to the highway network. This enabled planning professionals to evaluate alternative system plan goals utilizing Geographic Information System (GIS) technology..

Forecast of Future Activity

FORECAST OF FUTURE ACTIVITY

The forecast of activity identifies the number of based aircraft at each public use airport in Michigan and the number and type of operations at each of those facilities for the base year (1998), and each of the target years (2005, 2010, and 2020).

Forecasting aviation activity in the state of Michigan is an integral part of the ***MASP 2000.*** Forecasts allow planning officials to anticipate and prepare for changes in aviation activity and the demand that these changes place on the system's infrastructure. The ***MASP 2000*** is designed to identify and assess development needs at airports that will play an essential role in the economic and social development of Michigan. Forecasts will also assist in the identification of airports in need of capital improvements and provide a guide for programming federal and state development funds.

To predict aircraft activity, ***MASP 2000*** focuses on two important measures of activity: based aircraft and aircraft operations. This chapter examines historical trends in based aircraft and operations activity levels, describe forecasting methods and the growth factors expected over the next 20 years, and comment on trends in aviation as a whole in the state of Michigan.

Forecast Trends

Prior to generating growth forecasts for based aircraft and operations in the state of Michigan, several other forecast sources were identified and assessed. In addition to examining the FAA's Terminal Area Forecast, a variety of other sources including the National Business Aviation Association, General Aviation Manufacturers Association (GAMA), and the National Air Transportation Association (NATA) were explored.

FAA Growth Outlook

The FAA publishes a Terminal Area Forecast (TAF) for each airport in the National Plan of Integrated Airports System (NPIAS) using historical based aircraft counts as the primary indicator of activity. The FAA's General Aviation forecast projects nationwide a 1 percent annual growth in the general aviation fleet through the year 2009; to 212,960 aircraft. General aviation hours flown are projected to increase by 1.4 percent. Active pilots are forecasted to increase by 2.1 percent. Aircraft operations at FAA control tower airports throughout the US will see an annual increase of 2.1 percent. Non-towered airports, which represent about 94 percent of all airports in Michigan, are forecasted to have no growth in based aircraft or operations over the FAA forecast period. Detailed historic records at Michigan non-towered airports indicate that a "no growth" alternative for these airports is unlikely. Rather an MDOT growth outlook based on historical trends that project a modest increase in based aircraft and operations is more likely to occur.

MDOT Growth Outlook

MDOT pursued an alternate forecast that is felt to more accurately model expected growth in Michigan's general aviation community. These forecasts are based on the application of linear regression to the historical activity levels in both based aircraft and operations. Trends were established using 1988-1998 data gathered through field inspections, the Aircraft Traffic Counter Program and Control Tower Activity Reports and information contained in the Transportation Management System (TMS) and the Aviation Information Management System (AIMS). Understanding that past trends are not always accurate indicators of the future, some qualitative analysis of the numerical results was undertaken to calibrate the models and to modify extreme anomalies based on field experience.

In order to forecast based aircraft and total operations at each airport, study participants concluded that separate regression analyses be run for individual FAA group classifications within each planning region of the state. Airports in the C-II/III and D-III classifications are so few in number, that it was decided to combine them into one statewide group to run the analyses. In each case, based aircraft analysis and operations analysis were run separately resulting in unique forecast curves for each airport classification and region of the state. A detailed discussion of the linear regression model used for forecast preparation can be found in the ***MASP 2000 Technical***

Supplement.

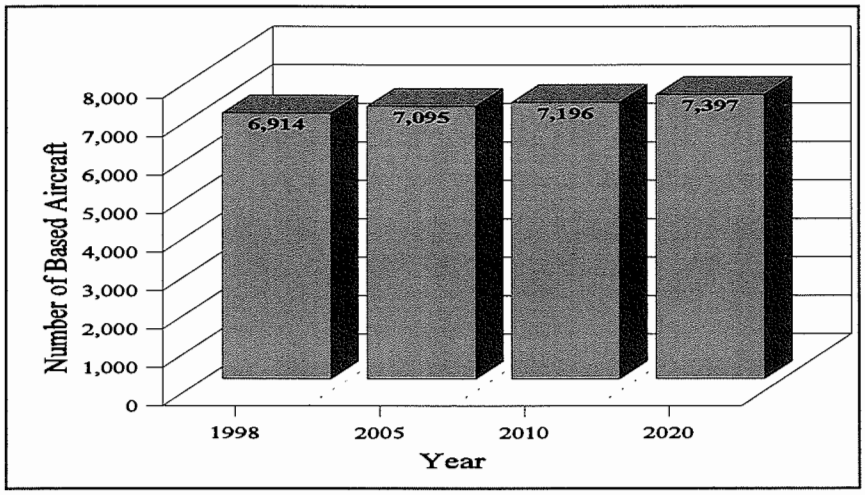
MASP Forecasts

Using the linear regression technique discussed previously, the anticipated growth in the number of based aircraft and total operations was determined for the years 2005, 2010, and 2020.

Based Aircraft

The number of based aircraft in Michigan is expected to grow 7.0 percent between 1998 and 2020 to almost 7,400.

Figure 1
Based Aircraft Historic and Forecast Trends



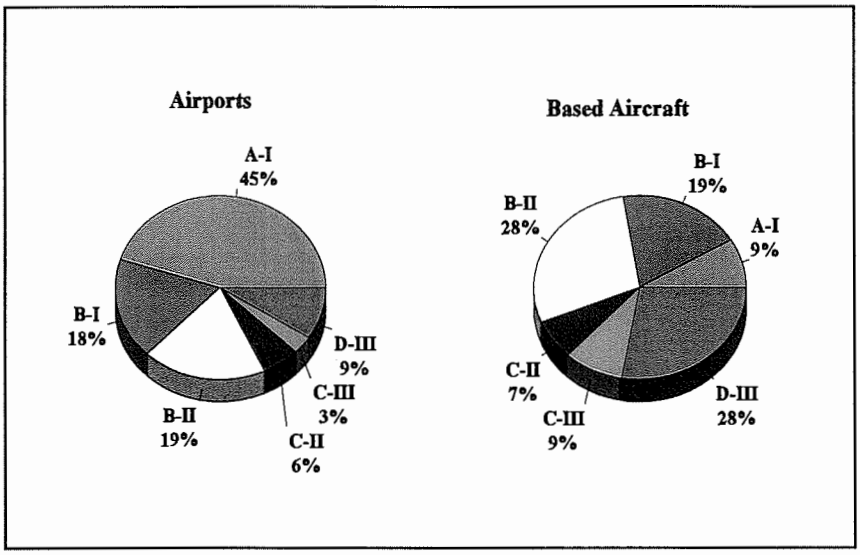
Over the past 5 years, the number of based aircraft has decreased slightly from 6,957 aircraft in 1994 to 6,914 in 1998 -- a 0.6 percent decline. The regression analysis indicates that this decline is reversing and modest increases are anticipated by the end of the forecast period. The number of based aircraft at each airport is detailed in Appendix A.

Table 5
Forecasted Based Aircraft in Michigan 1998-2020

Year	Based Aircraft	Pct Change from 1998
1998	6,914	na
2005	7,095	2.6
2010	7,196	4.1
2020	7,397	7.0

The distribution of based aircraft by airport classification is displayed in Figure 2.

Figure 2
Based Aircraft Distribution, 2020

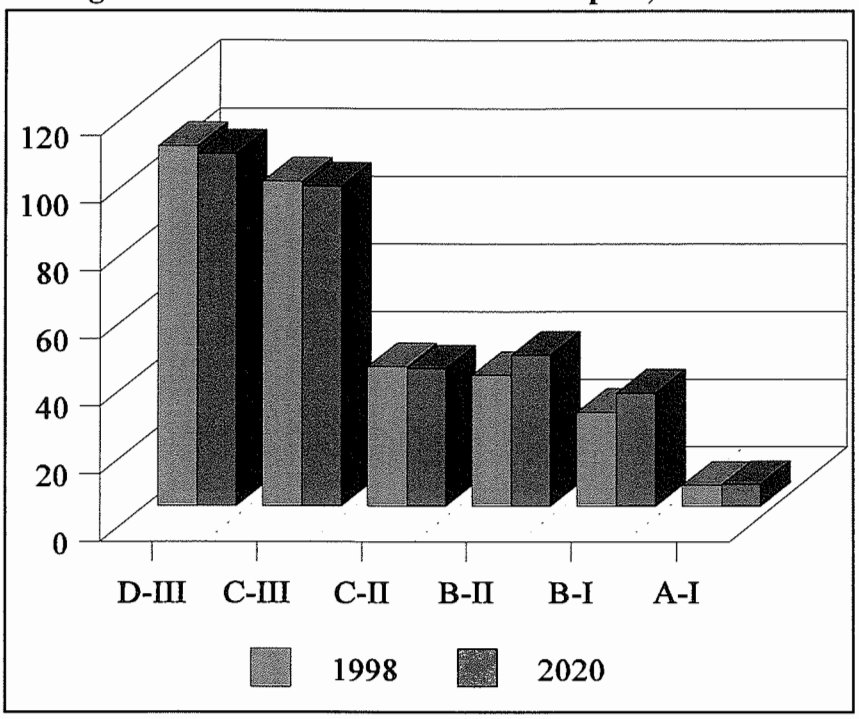


Although C and D category airports represent only 18 percent of the total airports, they have 44 percent of the total based aircraft. At the other extreme, A-I airports represent 45 percent of the total number of airports but have just 9 percent of the based aircraft.

Figure 3 displays the average number of based aircraft by airport classification. As expected, the most developed airports, the D-III and C-III facilities, have the greatest average number of based aircraft with more than 100 per airport. At the opposite end of the spectrum the least developed airports, A-I facilities, have the lowest average number of based aircraft with 6 per airport. From 1998 to 2020 it is interesting to note that the greatest growth in average number of based aircraft will occur at the "B" category airports, with the other airport categories remaining somewhat stable. It appears that as small

single engine aircraft are replaced with higher performance aircraft at the most developed airports, those smaller aircraft will be shifting to the "B" category airports.

Figure 3
Average Number of Based Aircraft Per Airport, 1998-2020



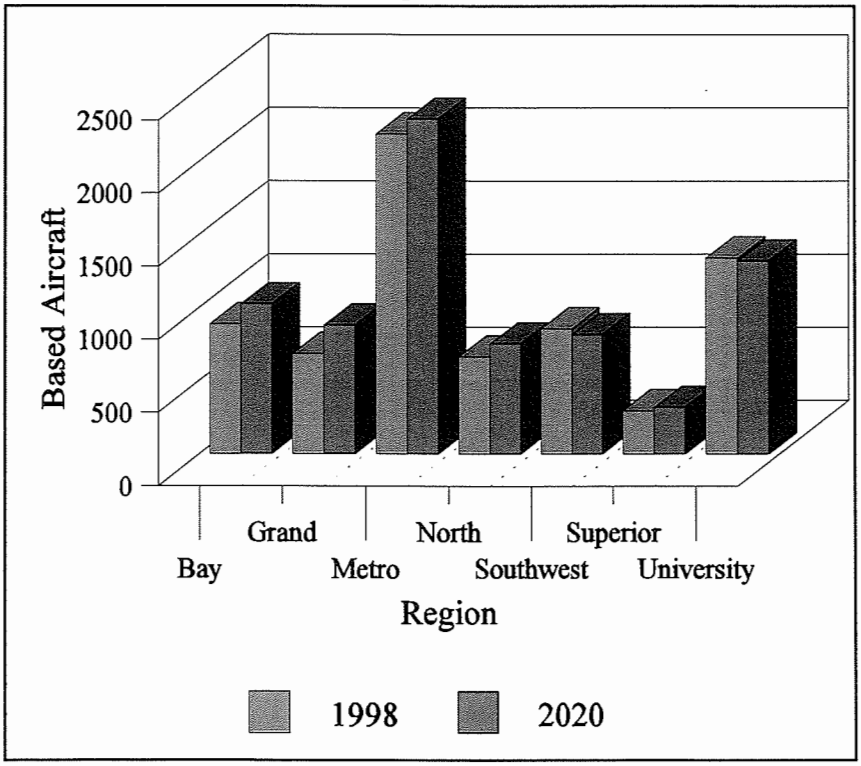
The data in Table 6 indicates that B-I and B-II airports are expected to show the greatest growth in based aircraft while the larger C and D class airports are expected to experience a slight decrease in based aircraft.

Table 6
Based Aircraft By Airport Classification

Airport Class	Total Based Aircraft by Airport Classification				Percent Change
	1998	2005	2010	2020	1998-2020
A-I	663	693	693	692	4.4
B-I	1,166	1,239	1,295	1,409	20.8
B-II	1,787	1,890	1,947	2,060	14.5
C-II	495	493	492	488	(1.4)
C-III	673	670	668	663	(1.5)
D-III	2,130	2,110	2,102	2,085	(2.1)
Total	6,914	7,095	7,196	7,397	7.0

Figure 4 displays the trends in based aircraft by MDOT region.

Figure 4
Based Aircraft By MDOT Region, 1998-2020



Of the seven MDOT regions, only the University and Southwest regions are expected to exhibit a reduction in the total number of based aircraft. The remaining regions will experience growth with the greatest increase occurring in the Grand region.

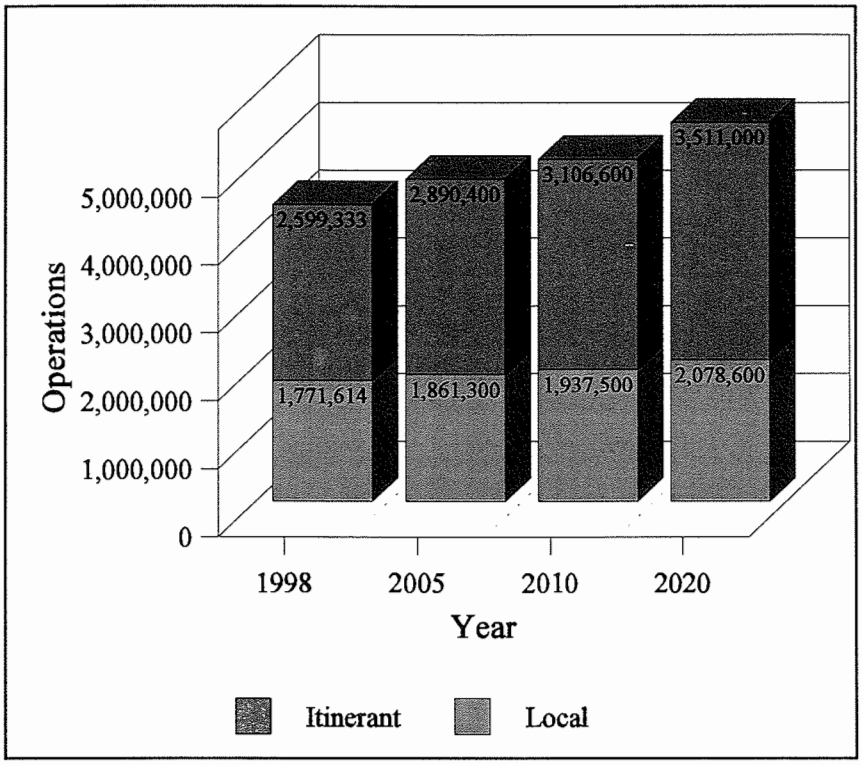
Table 7
Based Aircraft By MDOT Region

Region	Total Based Aircraft by MDOT Region				Percent Change
	1998	2005	2010	2020	1998-2020
Bay	886	927	959	1,023	15.5
Grand	685	745	790	879	28.3
Metro	2,189	2,213	2,238	2,290	4.6
North	663	717	729	752	13.4
Southwest	855	851	839	816	(4.6)
Superior	295	304	309	317	7.5
University	1,341	1,338	1,332	1,320	(1.6)
Total	6,914	7,095	7,196	7,397	7.0

Operations

The number of aircraft operations in Michigan are expected to grow by 27.9 percent between 1998 and 2020 to 5.6 million total operations.

Figure 5
Aircraft Operations Historic and Forecast Trends



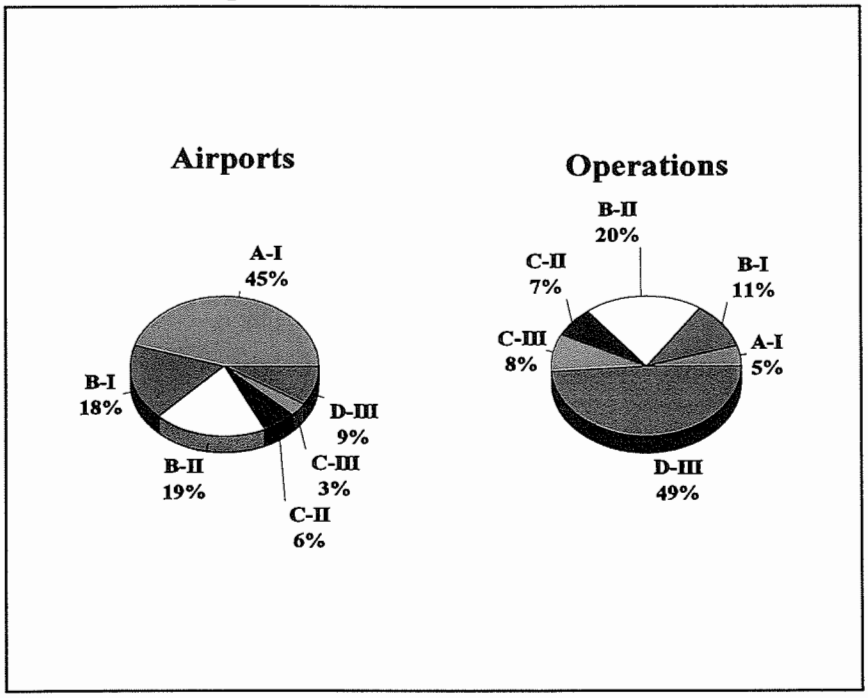
While based aircraft figures have remained stable in recent years, aircraft operations have grown from 3.9 million in 1988 to 4.4 million in 1998 -- a 13.2 percent increase. During this period itinerant operations grew at a faster pace, 15.0 percent, than local operations which grew by just 10.7 percent. This trend is expected to continue where the growth in itinerant operations will outpace the growth in local operations -- 35.1 percent to 17.3 percent respectively. The statewide forecast figures for itinerant, local and total aircraft operations are identified in the following table. The total number of current and forecasted operations at each of the 236 airports is found in Appendix A.

Table 8
Forecasted Total Aircraft Operations 1998 to 2020

Year	Local Operations	Itinerant Operations	Total Operations	Pct Change from 1998
1998	1,771,614	2,599,333	4,370,947	na
2005	1,861,300	2,890,400	4,751,700	8.7
2010	1,937,500	3,106,600	5,044,100	15.4
2020	2,078,600	3,511,000	5,589,600	27.9
Pct Change 1998-2020	17.3%	35.1%	27.9%	

The distribution of aircraft operations by classification of airport is displayed in Figure 6.

Figure 6
Total Aircraft Operations Distribution, 2020



As before, C and D category airports represent only 18 percent of the total public use airports but have 64 percent of total operations. At the opposite extreme, A-I airports with 45 percent of the total airports, have just 5 percent of total aircraft operations.

Figure 7
Total Operations Per Airport, 1998-2020

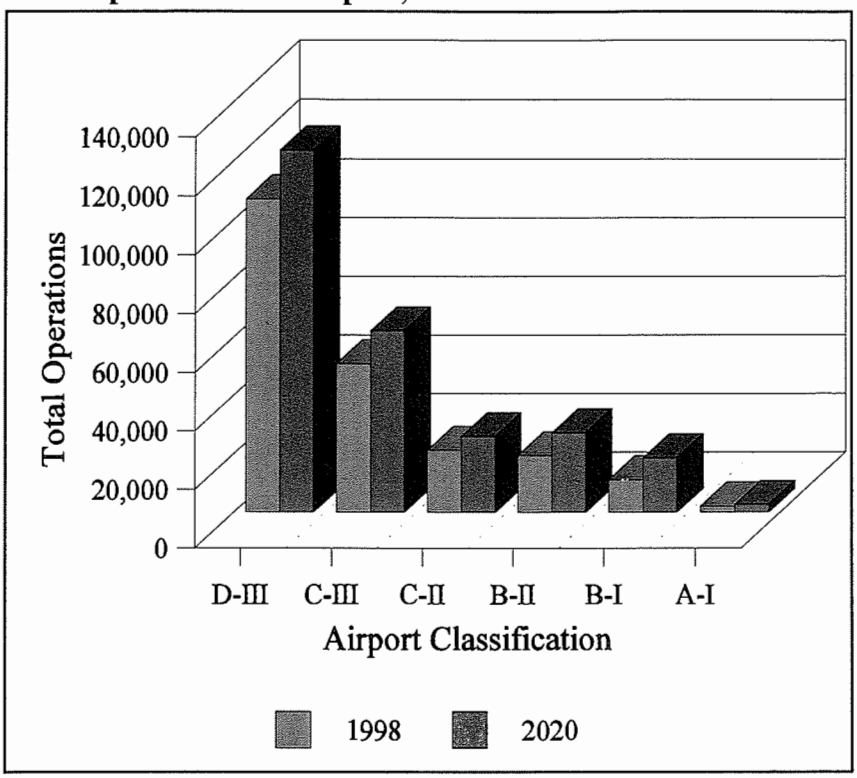


Figure 7 displays the average number of total operations by airport classification. As expected, the most developed airports have the greatest number of total aircraft operations. Airports in category D-III average more than 100,000 total annual operations. Airports in category A-I average approximately 2,000 total annual operations. Aircraft operations in all airport classifications are forecasted to increase.

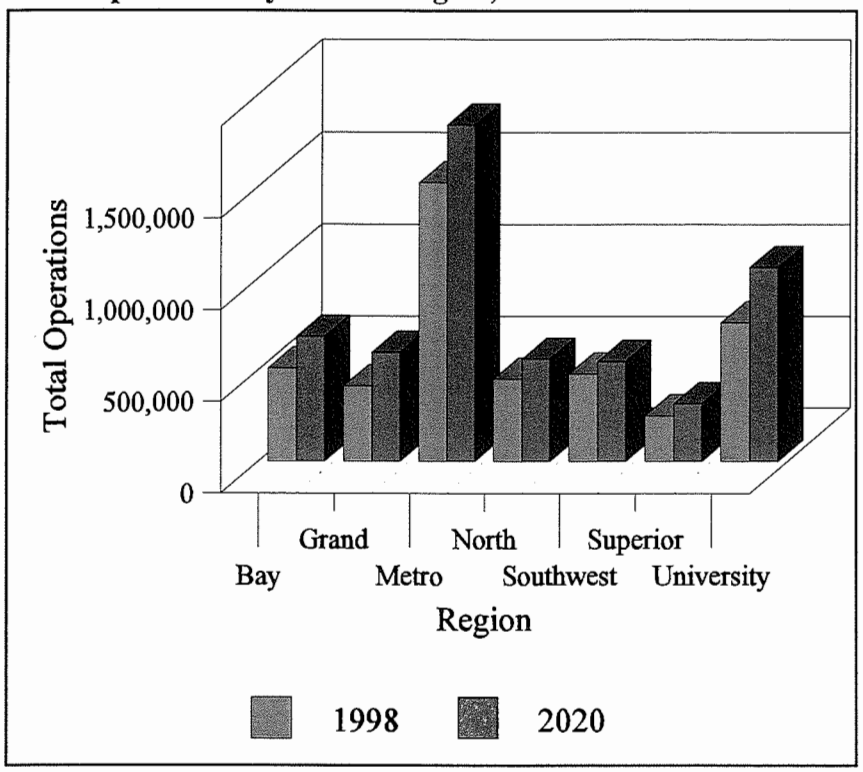
Table 9
Operations Forecast By Airport Classification

Class	1998	2005	2010	2020	Pct Change 1998-2020
A-I	221,560	259,000	268,800	288,200	30.1
B-I	466,440	561,300	635,300	783,000	16.8
B-II	893,959	1,014,500	1,107,100	1,253,000	40.2
C-II	297,378	305,200	324,000	362,800	22.0
C-III	355,799	365,300	387,600	434,300	22.1
D-III	2,135,811	2,246,400	2,321,300	2,468,400	15.6
Total	4,370,947	4,751,700	5,044,100	5,589,700	27.9

Although D-III airports will continue to contribute the largest number of operations over the forecast period, the smaller B-I and B-II class airports will each experience an increase of more than 300,000 total operations.

Figure 8 displays the trends in total operations by MDOT region.

Figure 8
Total Operations By MDOT Region, 1998-2020



All regions are expected to have an increase in total operations. The Grand region, followed closely by the University region, is expected to show the greatest overall growth in aviation activity.

Table 10
Operations Forecast By MDOT Region

Region	1998	2005	2010	2020	Pct Change 1998-2020
Bay	507,381	565,700	605,500	681,900	34.4
Grand	410,191	473,700	514,800	595,600	45.2
Metro	1,519,229	1,607,000	1,682,300	1,831,900	20.6
North	449,816	481,700	521,100	559,000	24.3
Southwest	477,886	507,000	519,100	546,000	14.3
Superior	248,578	270,900	285,200	314,900	26.7
University	757,866	845,700	916,100	1,060,400	39.9
Total	4,370,947	4,751,700	5,044,100	5,589,700	27.9

Goals and Objectives

GOALS AND OBJECTIVES

Issue Identification

As part of the development of the Michigan Airport System Plan, the study team, including both MDOT staff and the Steering Committee, examined issues affecting air transportation in Michigan. The results of that examination are summarized below.

Preservation of Endangered Airports

There are 236 public use airports currently in operation throughout Michigan. At any given time several of these facilities are under pressure from local officials and/or developers to be closed and converted to an alternate use. These pressures are most often exerted on small general aviation airports operating in or adjacent to their service communities. This is a particular concern to airports operating in Southeast Michigan where additional airport closures would threaten overall regional capacity. Generally, public use airports, from a preservation perspective, fall into one of four categories. (1) The airport is the only public use facility serving the area and should be preserved because of the access it provides to the community and access it provides the community to outside services. (2) The airport is in an area where regional aircraft capacity is stressed and the facility needs to be preserved to assure continued regional capacity. (3) The airport functions as a reliever to a large airport by allowing lower performance aircraft to utilize the smaller airport rather than the larger airport where the number of operations by high performance aircraft would be inhibited by the smaller aircraft. At very busy airports, a mix of slow aircraft and faster, heavier aircraft severely affects operational capacity. Preservation of a smaller airport that would provide an alternative to a very busy

airport would benefit both types of aircraft operations. (4) The airport duplicates service that is already provided by another airport in reasonable proximity. Where a community is served by more than one airport, efforts should be undertaken to assure the continued operation of the airport that is best suited to respond to the current and ultimate aviation needs of that community.

Preservation of Airport Infrastructure

MDOT's emphasis on maintaining the integrity of pavements at airports throughout Michigan should continue. As pavement ages, more and more funding resources are being focused on rebuilding and reconstructing airport pavements. Since 1987 pavement condition evaluations have been conducted at many airports throughout the state. The resulting data has provided the department and local airport sponsors with the information needed to assist in the management of pavement life and the appropriate timing of pavement rehabilitation/reconstruction actions.

Access to Population Centers

Significant population centers generate and attract a wide range of general aviation operations including flights for business, freight, cargo, medical emergencies, search and rescue, law enforcement, training, etc. The presence of a year-round general aviation facility to serve these trip needs is an essential component of a well rounded, full service community.

Access to Business Centers

Significant economic and manufacturing production centers require a wide range of transportation facilities to respond to product and people moving needs. Airports can respond to the product movement needs by permitting the rapid, timely movement of parts and products critical to economic vitality. Timely movement of executives, key personnel and clients between production centers can also be accomplished through development of general aviation airport facilities that provide the full range of services.

Access to Tourism/Convention Centers

In Michigan, the tourism and convention industry is a four-season, rapidly-expanding component of the state's overall economic well being. Access to tourist and convention areas, not only from within Michigan but also from throughout the mid-west and nation, can be effectively provided through properly developed airport facilities. In a number of locations, primarily in northern Michigan and in shoreline communities, the local area is as dependent on the tourism/convention industry as the Detroit area has historically been dependent on the automobile industry.

Access to Isolated Areas

There are seven populated Great Lakes islands that for at least a portion of the winter months are without ferry service and consequently seasonally isolated. During these periods air transportation provides the only reliable access between the mainland and these islands. In these cases island populations are dependent on aviation to provide emergency and other essential access. In 1996 both the Michigan State Transportation Commission and the Michigan Aeronautics Commission adopted an *Island Transportation Policy*. Islands affected by this include Beaver, Bois Blanc, Drummond, Harsens, Mackinac, Neebish and Sugar islands.

Compatible Land Use and Zoning

Historically, airports were developed in rural areas near the communities they serve. Over time, however, urban development in many instances has grown out to the airport environs. Where land use zoning is ineffective, non-compatible land uses such as residential areas, schools and churches can locate under airport approaches where the resulting noise can cause serious problems between airports and area residents. Additionally, inappropriate land uses in a runway approach have a negative effect on the type of approach, which impacts minimum weather conditions that an aircraft can safely approach an airport. Effective local airport zoning can prevent this situation from worsening by limiting development in these areas to compatible land uses such as agriculture, parks, commercial and industrial uses. Effective local airport zoning is a concern to the state. Zoning decisions are the responsibility local government and local airport zoning boards.

Interface With Other Modes of Transportation

Rather than viewing an airport as the beginning or ending point of a

trip, it should be viewed as a transfer point from one mode of transportation to another. Not only is efficient and effective movement of people and goods dependent on an appropriately developed airport, but also on appropriate access to the airport, and efficient transfer from the surface mode to the air mode. At the most demanding airports, this may entail highways that can accommodate significant traffic volumes, public transportation services, and significant passenger and cargo movements. A variety of access enhancement actions may be appropriate ranging from infrastructure improvements to traffic control devices.

All-Weather Airport Access

During periods of low clouds and reduced visibility, an airport can only be used with the aid of instruments which allow flight through the poor weather conditions. By using Instrument Flight Rules (IFR) a pilot can fly an aircraft safely when cloud ceilings and visibility limits do not allow flight by visual means. Additionally, IFR allow a pilot to descend to minimum safe altitudes and allow the pilot to see the runway and land safely.

The precision of the navigational landing aids, both in the cockpit and on the ground, determines the minimum altitude and visibility a pilot can safely encounter and see the runway to land. The higher the minimums, the more frequently a pilot has to divert to an alternate airport during periods of adverse weather conditions. An airport's utility to the business community, as well as other users, is enhanced by increasing the precision of the navigational landing aids available. In Michigan, this is particularly important where the Great Lakes often affect weather conditions that impact aircraft operations. To this end, the Michigan Aeronautics Commission in 1999 adopted an *All Weather Airport Access Plan.* Features of that plan are incorporated into the ***MASP 2000.***

Airport Services

The range of services provided at airports varies significantly. Basic aircraft services include fuel, aircraft repair, and hangar facilities available during normal business hours. Basic pilot services include telephone, restrooms, and access to shelter.

State Long-Range Plan

The State Long-Range Plan (SLRP) Statewide Planning Process

included a 60-member Customers and Providers Advisory Committee that assisted in the development of the SLRP. The committee's members came from a wide variety of statewide organizations, representing both those who use the transportation services and those who provide them. The Committee met and discussed transportation issues for over one year to develop the following seven statewide goals that have subsequently been adopted by the State Transportation Commission to set policy direction for transportation decisions throughout the state.

Service Coordination - Create incentives for coordination between public officials, private interests and transportation agencies to improve safety, enhance or consolidate services, strengthen intermodal connectivity, and maximize the effectiveness of investments for all modes by encouraging regional solutions to regional transportation problems.

Land Use Coordination - Coordinate local land use planning, transportation planning and development to maximize the use of existing infrastructure, increase the effectiveness of investment, and retain or enhance the vitality of the local community.

Basic Mobility - Work with general public, public agencies and private sector organizations to ensure basic mobility for all Michigan citizens by, at a minimum, providing safe, efficient and economical access to employment, educational opportunities, and essential services.

Preservation - Within the constraints of state and federal law, direct investment in existing transportation systems to effectively provide safety, mobility, access, intermodal connectivity, or support economic activity and the viablilty of older communities, and ensure that the facilities and services continue to fulfill their intended functions.

Intermodalism - Improve intermodal connections to provide "seamless" transportation for both people and products to and throughout Michigan.

Environment and Aesthetics - Provide transportation systems that are environmentally responsible and aesthetically pleasing.

Moving into the 21st Century - Provide transportation infrastructure and services that strengthen the economy and competitive position of Michigan and its regions for the 21st century.

Michigan Airport System Plan Goals

In response to the previously discussed aviation issues and the long range goals as described in the State Long-Range Plan, a series of Michigan Airport System Plan goals have been established. These goal statements can be divided into system goals and facility goals. The system goals relate to the capability of system airports to respond to air transportation needs of Michigan's residents, visitors and the business community. Facility goals relate to the establishment of minimum airport development standards that adequately describe essential airport facility characteristics.

MASP System Goals

Serve Significant Population Centers - Provide service to significant population centers through year-round general aviation facilities.

Serve Significant Business Centers - Support an airport system that adequately and effectively responds to the critical business aviation needs of the state.

Serve Significant Tourism/Convention Centers - Support an airport system that adequately and effectively responds to the significant tourism/convention aviation needs of the state.

Provide the General Population Access to the Aviation System - Preserve and develop the system of airports necessary to respond to basic aviation needs of the general population.

Provide Adequate Land Area Coverage - Preserve and develop the system of airports necessary to provide basic land area coverage.

Preserve Regional Capacity - Preserve adequate airport capacity in each region of the state to assure continued effective air transportation.

Serve Isolated Areas - Support aviation facilities capable of providing essential transportation services during those times of the year when other transportation modes are unavailable to isolated areas.

MASP Facility Goals

Complete and Adequate Primary Runway System - Airports designated in Tier 1 of the state airport system should have a complete and adequate runway system including: a paved runway of appropriate length, width and strength; an appropriate runway lighting system; access from the terminal apron area to the primary runway; a parallel taxiway when appropriate based on airport classification and/or activity level; and clear approaches with the appropriate glide slope.

Pavements in "Good" Condition - Airports designated in Tier 1 or Tier 2 of the state airport system should have pavements in their *primary runway system* in "good" condition.

All Weather Access - Airports designated in Tier 1 of the state airport system should have all weather access. This includes an Automated Weather Observation System (AWOS) or equivalent, a Pilot Information System to access national weather information for flight planning, and a direct communication capability between the pilot and the appropriate ATC.

Year-round Operation - Airports designated in Tier 1 of the state airport system should be open throughout the year. This means the airport should be staffed throughout the year, be able to clear the runway of snow in a timely fashion, have at least one paved runway that would not be affected by spring thaw conditions, and provide a basic level of pilot/aircraft services.

Basic Pilot and Aircraft Services - Airports designated in Tier 1 or Tier 2 of the state airport system should have an appropriate range of pilot and aircraft services. These services include telephone, restrooms, access to shelter, fuel and aircraft services.

Airport Zoning - Airports designated in Tier 1 of the state

airport system should have a current airport zoning plan and an active airport zoning board.

Appropriate Instrument Approaches - Airports designated in Tier 1 or Tier 2 of the state airport system should have the appropriate two-dimensional or three-dimensional instrument approach system that permits reliable air operations in inclement weather conditions.

Appropriate Surface Access - Airports designated in Tier 1 of the state airport system should have appropriate highway, rail and/or public transportation access responsive to both the volume and type of vehicular traffic requiring airport access.

Relationship Between MASP Goals and SLRP Goals

The relationship between the State Long Range Plan goals and the goals of the Michigan Airport System Plan are displayed in Table 12. Although a high relationship has been identified between the two plans in many areas, the strongest relationship has been identified with "preservation" from the SLRP perspective. The strongest linkage with the ***MASP 2000*** has been identified with "serve business and tourism/convention centers." This linkage indicated that system preservation and service to business and tourism/convention centers should have a high emphasis throughout the plan.

Table 11
Relationship of Michigan Airport System Plan Goals and State Long-Range Plan Goals

MASP Goals	**State Long-Range Plan Goals**						
	Service Coordination	Land Use Coordination	Basic Mobility	Preservation	Intermodalism	Environment & Aesthetics	Moving into 21st Century
MASP System Goals							
Preserve Essential Regional Access	H	H	H/M	H	H	H	H
Preserve Regional Capacity	M	H	M	H	H	M/L	H
Serve Population Centers	H/M	H	H	H	H	H	H
Serve Business & Tourism/Convention Centers	H	H	H	H	H	H	H
Serve Isolated Areas	M/L	M/L	H	H	L	H	L
MASP Facility Goals							
Complete & Adequate Primary Runway System	L	H	M	H	L	M	H
Pavements in "Good" Condition	L	L	M	H	L	M	H
All Weather Access	M	L	H	M	L	M	H
Year-Round Operation	M	L	H	M	L	M	H
Pilot Services	M	L	H	L	M	L	H
Appropriate Instrument Approaches	M	H	H	M	L	M	H
Airport Zoning	L	H	M	H	M	H	M
Appropriate Surface Access	H	H	H	H	H	M	H

Notes: "H" indicates a high linkage between the MASP and SLRP.
"M" indicates a moderate linkage between the MASP and SLRP.
"L" indicates a low linkage between the MASP and the SLRP.

Goal Development and System Recommendations

GOAL DEVELOPMENT AND SYSTEM RECOMMENDATIONS

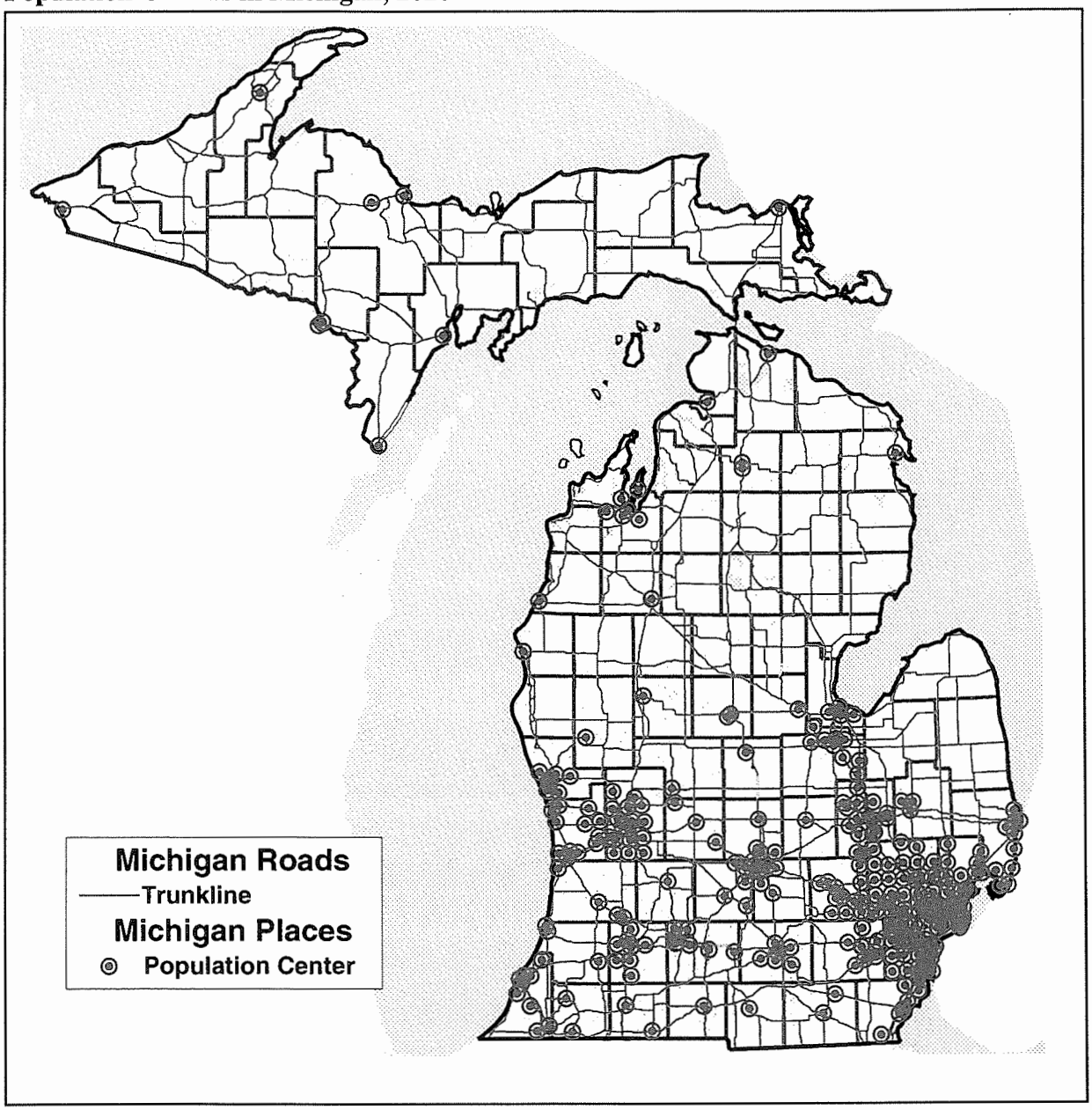
Each of the seven MASP system goals has undergone a series of alternatives analysis resulting in a recommendation for the ultimate airport system for each goal in the year 2020. Alternative development involved establishing and testing various combinations of service standards for each system goal. Included for each alternative was a variety of surface travel time, minimum airport classification, and service thresholds. Surface travel time combinations tested included 15, 20, 30, and 45 minutes for many of the system goals. Generally, a surface travel time of 30 minutes resulted in a system that appropriately responsive. Service threshold combinations were tested at 90, 95 and 100 percent. In most cases a 90 percent service threshold left too many holes in the system; and a 100 percent threshold resulted in a system that would be overbuilt. Results of that analysis, including a summary of how well the current system is responding to future needs are presented for each system goal in the following section of the MASP report.

Serve Significant Population Centers

Goal: Provide service to significant population centers through year-round general aviation facilities.

Background: Population centers are defined as a minor civil division (MCD) of 5,000 or more people with a population density of 250 or more per square mile. In 1995 there were 246 population centers meeting this criteria. The 2020 forecast indicates that there will be 295 population centers meeting this criteria. Map 2 identifies the location of the population centers in 2020.

Map2
Population Centers in Michigan, 2020



System Standards: The population centers system standard relates to the proximity of an airport to a population center, the minimum classification of airport needed to adequately respond to population centers and the performance target percent for population centers to be served by those airports. Table 12 summarizes the system standards for population centers.

Table 12 **System Standards: Population Centers**	
Surface Travel Time	30 minutes
Minimum Airport Classification	C-II
Tier 1 Performance Target	95 percent
Tier 2 Performance Target	100 percent

As described previously, the statewide travel demand model is the analytical tool used to determine the proximity of airports to population centers. That tool was used to determine the service area coverage of all candidate airports and the number and size of population centers served by those airports. In summary, population centers in Michigan should be served within 30 minutes surface travel time by airports in the C-II classification. Those airports needed to respond to 95 percent of the population centers are included in Tier 1; with the airports needed to respond to 100 percent of the population centers included in Tier 2.

System Recommendation: To the extent possible, airports that were currently serving population centers and developed to the proper minimum airport classification were selected for inclusion in the population center alternative. Additional airports to be included in Tier 1 were selected based on a combination of population center size, remoteness from a previously included airport, and the number of additional population centers that would be served. The airports selected for inclusion in the preferred alternative and their 30 minute surface travel time are displayed in Map 3. Among the 32 airports included in Tier 1 for population centers are three airports that would require a reclassification to the C-II category. These airports are...

- ☐ Adrian, Lenawee County Airport
- ☐ Greenville Municipal Airport
- ☐ Howell, Livingston County Airport

The other 29 airports currently meet the C-II airport classification standard. All 32 Tier 1 airports are identified in Table 14.

Map 3
Population Centers: Tier 1 Airport System

Table 13
Tier 1 Airport System: Population Centers

Minimum Airport Classification Standard: C-II

City	Airport	Current Class
Adrian	Lenawee County	B-II
Alpena	Alpena County Regional	D-III
Battle Creek	W.K. Kellogg	D-III
Benton Harbor	Southwest Michigan Regional	C-III
Cadillac	Wexford County	C-II
Detroit	Detroit City	C-III
Detroit	Detroit Metro Wayne County	D-III
Detroit	Willow Run	D-III
Escanaba	Delta County	D-III
Flint	Bishop International	D-III
Gaylord	Otsego County	C-III
Grand Rapids	Kent County International	D-III
Greenville	Greenville Municipal	B-II
Hancock	Houghton County Memorial	D-III
Holland	Tulip City	C-III
Howell	Livingston County	B-II
Iron Mountain	Ford	D-III
Ironwood	Gogebic-Iron County	D-III
Jackson	Jackson County-Reynolds	C-III
Kalamazoo	Kalamazoo/Battle Creek Intl.	D-III
Lansing	Capital City	D-III
Manistee	Manistee County-Blacker	C-II
Marquette	Sawyer	D-III
Menominee	Menominee-Marinette Twin City	C-III
Mt. Pleasant	Mt. Pleasant Municipal	C-II
Muskegon	Muskegon County	D-III
Pellston	Pellston Regional of Emmet Co.	D-III
Pontiac	Oakland County International	D-III
Port Huron	St. Clair County International	C-III
Saginaw	M B S International	D-III
Sault Ste. Marie	Chippewa County International	D-III
Traverse City	Cherry Capital	D-III

Those airports required to achieve a 100 percent population center coverage are designated in Tier 2 and include the ten airports identified in Table 14. Seven of these airports do not currently meet the C-II Airport Classification for population centers.

Table 14
Tier 2 Airport System: Population Centers
Minimum Airport Classification Standard: C-II

City	Airport	Current Class
Big Rapids	Roben-Hood	B-II
Coldwater	Branch County Memorial	B-II
Fremont	Fremont Municipal	C-II
Hastings	Hastings City/Barry County	B-II
Hillsdale	Hillsdale Municipal	B-II
Ludington	Mason County	B-II
Monroe	Monroe Custer	C-II
Romeo	Romeo	B-II
Sparta	Sparta	B-II
Sturgis	Kirsch Municipal	C-II

Goal Achievement Summary: The system of airports identified in Table 15 results in the following level of performance achievement.

Table 15
Goal Achievement Summary: Population Centers

Number of Tier 1 C-II Airports	32
Population Centers Served (percent)	95
Number of Tier 2 Airports	10
Population Centers Served (percent)	99+

The 32 airports designated for inclusion in Tier 1 meet the target performance objective of 95 percent. The 10 airports included in Tier 2 results in all population centers being served with the exception of Ishpeming. This population center is marginally outside the 30 minute surface travel time for this standard being 31 minutes from Marquette, Sawyer Airport.

Serve Significant Business Centers

Goal: Support an airport system that adequately and effectively responds to the critical and essential business aviation needs of the state.

Background: Business centers in Michigan are defined as Travel Analysis Zones (TAZ) with 3,000 or more employees. There are forecasted to be 450 such zones in the year 2020 with 95 of those zones having 10,000 or more employees. These zones are concentrated in or near the state's major metropolitan areas. A number of zones are also located in or near many Michigan communities across the state. Map 4 displays the location of business centers in Michigan.

Map 4
Business Centers in Michigan, 2020

System Standards: Business centers system standards relate to proximity of an airport to a business center, the minimum classification of airport needed to adequately respond to business centers and the performance target percent for business centers to be served by those airports. Table 16 summarizes the system standards for business centers.

Table 16 **System Standards: Business Centers**	
Surface Travel Time	30 minutes
Minimum Airport Classification	C-II
Tier 1 Performance Target	95 percent
Tier 2 Performance Target	100 percent

As described previously, the statewide travel demand model is the analytical tool used to determine the proximity of airports to business centers. That tool was used to determine the service area coverage of all candidate airports and the number and size of business centers served by those airports. In summary, business centers in Michigan should be served within 30 minutes surface travel time by airports in the C-II classification. Those airports needed to respond to 95 percent of the business centers are included in Tier 1; with the airports needed to respond to 100 percent of the business centers included in Tier 2.

System Recommendation: To the extent possible, airports that were already developed to the proper minimum airport classification were selected for inclusion in the business center alternative. Additional airports to be included in Tier 1 were selected based on a combination of business center size, remoteness from a previously included airport, and the number of additional business centers that would be served. Among the 35 airports included in Tier 1 for population centers are seven airports that would require a reclassification to the C-II category. These airports are...

- ☐ Adrian, Lenawee County Airport
- ☐ Bad Axe, Huron County Memorial Airport
- ☐ Big Rapids, Roben-Hood Airport
- ☐ Charlevoix Municipal Airport
- ☐ Greenville Municipal Airport
- ☐ Hillsdale Municipal Airport
- ☐ Howell, Livingston County Airport

Map 5
Business Centers: Tier 1 Airport System

The other 28 airports currently meet the C-II airport classification standard. All 35 Tier 1 airports are shown in Map 5 and identified in Table 17.

Table 17
Tier 1 Airport System: Business Centers
Minimum Airport Classification Standard: C-II

City	Airport	Current Class
Adrian	Lenawee County	B-II
Alpena	Alpena County Regional	D-III
Bad Axe	Huron County Memorial	B-II
Battle Creek	W.K. Kellogg	D-III
Benton Harbor	Southwest Michigan Regional	C-III
Big Rapids	Roben-Hood	B-II
Cadillac	Wexford County	C-II
Charlevoix	Charlevoix Municipal	B-II
Detroit	Detroit City	C-III
Detroit	Detroit Metro Wayne County	D-III
Detroit	Willow Run	D-III
Escanaba	Delta County	D-III
Fremont	Fremont Municipal	C-II
Flint	Bishop International	D-III
Gaylord	Otsego County	C-III
Grand Rapids	Kent County International	D-III
Grayling	Grayling Army Airfield	C-II
Greenville	Greenville Municipal	B-II
Hancock	Houghton County Memorial	D-III
Hillsdale	Hillsdale Municipal	B-II
Holland	Tulip City	C-III
Howell	Livingston County	B-II
Jackson	Jackson County-Reynolds	C-III
Kalamazoo	Kalamazoo/Battle Creek Intl.	D-III
Lansing	Capital City	D-III
Manistee	Manistee County-Blacker	C-II
Marquette	Sawyer	D-III
Mt. Pleasant	Mt. Pleasant Municipal	C-II
Muskegon	Muskegon County	D-III
Pontiac	Oakland County International	D-III
Port Huron	St. Clair County International	C-III
Saginaw	M B S International	D-III
Sturgis	Kirsch Municipal	C-II
Traverse City	Cherry Capital	D-III
West Branch	West Branch Community	C-II

Those airports required to achieve a 100 percent population center coverage are designated in Tier 2 and include the 15 airports identified in Table 18. Of these airports, 12 do not currently meet the C-II Airport Classification for business centers.

Table 18
Tier 2 Airport System: Business Centers
Minimum Airport Classification Standard: C-II

City	Airport	Current Class
Ann Arbor	Ann Arbor Municipal	B-II
Caro	Caro Municipal	B-II
Cheboygan	Cheboygan City-County	B-II
Coldwater	Branch County Memorial	B-II
Gladwin	Gladwin Zettel Memorial	B-II
Hart-Shelby	Oceana County	B-I
Hastings	Hastings City/Barry County	B-II
Iron Mountain	Ford	D-III
Ironwood	Gogebic-Iron County	D-III
Lapeer	DuPont-Lapeer	B-I
Niles	Jerry Tyler Memorial	B-II
Rogers City	Presque Isle County/Rogers City	B-I
Sandusky	Sandusky City	B-I
Sault Ste. Marie	Sault Ste. Marie Muni-Sanderson	C-II
Sparta	Sparta	B-II

Goal Achievement Summary: The system of airports identified in Table 19 results in the following level of performance achievement.

Table 19
Goal Achievement Summary: Business Centers

Number of Tier 1 C-II Airports	35
Business Centers Served (percent)	95
Number of Tier 2 Airports	15
Business Centers Served (percent)	97

The 35 airports designated for inclusion in Tier 1 meet the target performance objective of 95 percent. The 15 airports included in Tier 2 results in 97 percent of business centers being served. All of the business centers not served in Tier 1 or Tier 2 are marginally outside of the 30 minute surface travel time. No business center in the state is more than 37 minutes from an airport designated in either Tier 1 or Tier 2.

Additionally, all large business centers, those with 10,000 or more employees, are served by the airports selected for inclusion in Tier 1.

Serve Significant Tourism/Convention Centers

Goal: Support an airport system that adequately and effectively responds to the critical and essential tourism/convention aviation needs of the state.

Background: Tourism and convention centers in Michigan are identified by allocating lodging use taxes generated in each county to the travel analysis zones within each county based on TAZ employment as a percent of total county employment. TAZs with $30,000 or more of annual lodging use tax generated as reported to the Michigan Department of Treasury are designated as tourism/convention centers. There are 293 tourism/convention centers in Michigan. Generally, these centers are located in or near major urbanized areas like Detroit, Grand Rapids and Lansing, or somewhat concentrated in the northwestern parts of the lower peninsula and eastern portions of the upper peninsula. Map 6 displays the location of tourism/convention centers in Michigan.

Map 6
Tourism/Convention Centers in Michigan, 1995

System Standards: Tourism/convention centers system standards relate to proximity of an airport to a tourism/convention center, the minimum classification of airport needed to adequately respond to tourism/convention centers and the performance target percent for tourism/convention centers to be served by those airports. Table 20 summarizes the system standards for tourism/convention centers.

Table 20 **System Standards: Tourism/Convention Centers**	
Surface Travel Time	30 minutes
Minimum Airport Classification	B-II
Tier 1 Performance Target	95 percent
Tier 2 Performance Target	100 percent

As described previously, the statewide travel demand model is the analytical tool used to determine the proximity of airports to tourism/convention centers. That tool was used to determine the service area coverage of all candidate airports and the number and size of tourism/convention centers served by those airports. In summary, tourism/convention centers in Michigan should be served within 30 minutes surface travel time by airports in the B-II classification. Those airports needed to respond to 95 percent of the tourism/convention centers are included in Tier 1; with the airports needed to respond to 100 percent of the tourism/convention centers included in Tier 2.

System Recommendation: To the extent possible, airports that were already developed to the proper minimum airport classification were selected for inclusion in the tourism/convention center alternative. Additional airports to be included in Tier 1 were selected based on a combination of tourism/convention center size, remoteness from a previously included airport, and the number of additional tourism/convention centers that would be served. Among the 39 airports included in Tier 1 for tourism/convention centers are five airports that would require a reclassification to the B-II category. These airports are...

- ☐ Baraga, new
- ☐ Frankfort, Dow Memorial Airport
- ☐ Munising, Hanley Field
- ☐ Rogers City, Presque Isle County/Rogers City Airport
- ☐ St. Ignace, Mackinac County Airport

The other 34 airports currently meet the B-II airport classification standard. All 39 Tier 1 airports are shown in Map 7 and identified in Table 21.

Map 7

Tourism/Convention Centers: Tier 1 Airport System

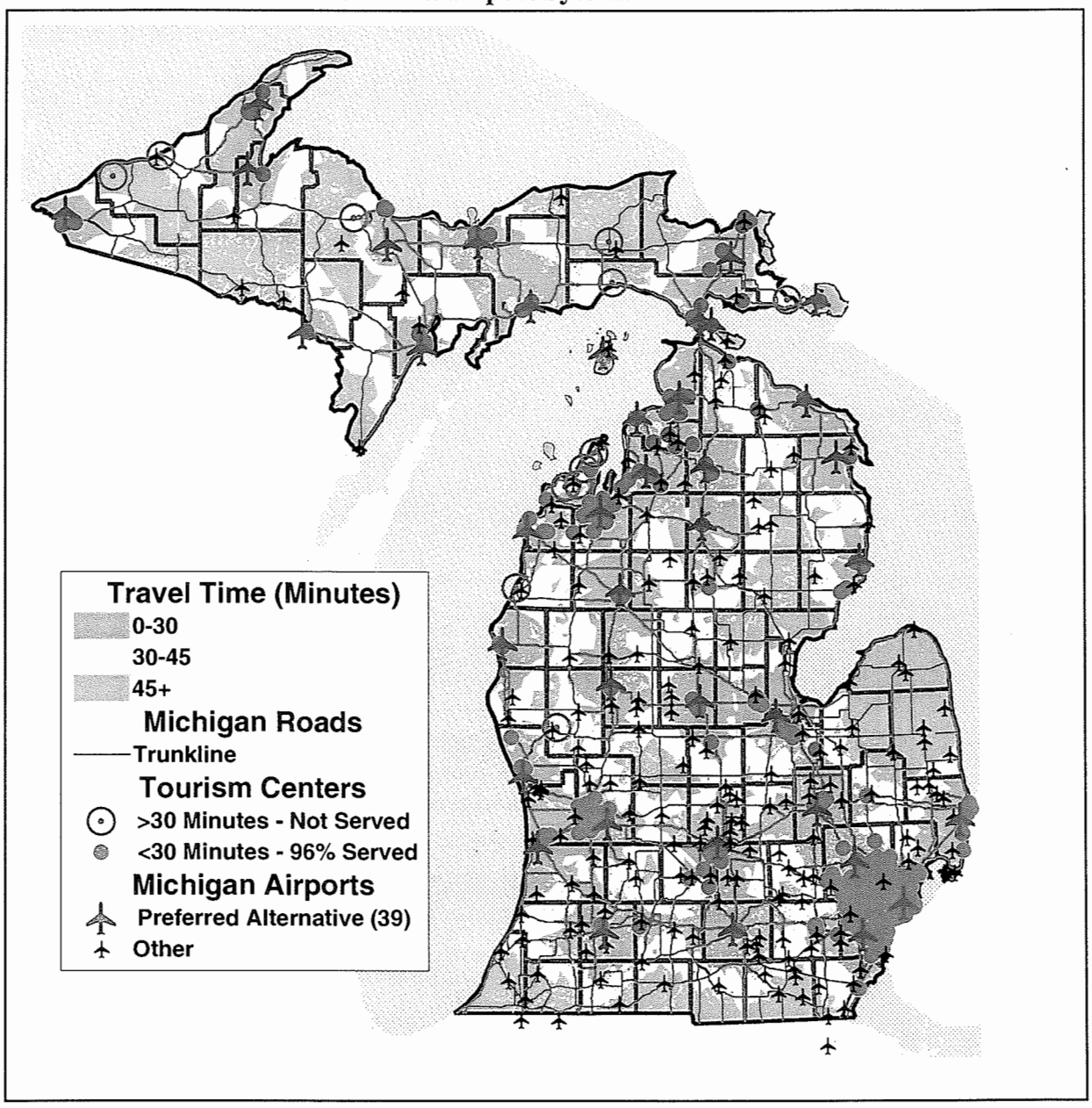


Table 21
Tier 1 Airport System: Tourism/Convention Centers
Minimum Airport Classification Standard: B-II

City	Airport	Current Class
Alpena	Alpena County Regional	D-III
Baraga	new	
Beaver Island	Beaver Island	B-II
Bellaire	Antrim County	C-II
Big Rapids	Roben-Hood	B-II
Cadillac	Wexford County	C-II
Charlevoix	Charlevoix Municipal	B-II
Detroit	Detroit City	C-III
Detroit	Detroit Metro Wayne County	D-III
Drummond Island	Drummond Island	B-II
Escanaba	Delta County	D-III
Flint	Bishop International	D-III
Frankfort	Dow Memorial	B-I
Gaylord	Otsego County	C-III
Grand Rapids	Kent County International	D-III
Grayling	Grayling Army Airfield	C-II
Hancock	Houghton County Memorial	D-III
Harbor Springs	Harbor Springs Municpal	B-II
Holland	Tulip City	C-III
Iron Mountain	Ford	D-III
Ironwood	Gogebic-Iron County	D-III
Jackson	Jackson County-Reynolds	C-III
Kalamazoo	Kalamazoo/Battle Creek Intl.	D-III
Lansing	Capital City	D-III
Ludington	Mason County	B-II
Mackinac Island	Mackinac Island	B-II
Manistique	Schoolcraft County	C-II
Marquette	Sawyer	D-III
Mt. Pleasant	Mt. Pleasant Municipal	C-II
Munising	Hanley Field	A-I
Muskegon	Muskegon County	D-III
Oscoda	Osdoda-Wurtsmith	D-III
Pontiac	Oakland County International	D-III
Port Huron	St. Clair County International	C-III
Rogers City	Presque Isle County/Rogers City	B-I
Saginaw	M B S International	D-III
Saint Ignace	Mackinac County	B-I
Sault Ste. Marie	Chippewa County International	D-III
Traverse City	Cherry Capital	D-III

Those airports required to achieve a 100 percent tourism/convention center coverage are designated in Tier 2 and include the ten airports

identified in Table 22. Of these airports, six do not currently meet the B-II Airport Classification for tourism/convention centers.

Table 22
Tier 2 Airport System: Tourism/Convention Centers
Minimum Airport Classification Standard: B-II

City	Airport	Current Class
Caseville	new	
Clare	Clare Municipal	B-I
Fremont	Fremont Municipal	C-II
Manistee	Manistee County-Blacker	C-II
Newberry	Luce County	B-I
Northport	Woolsey Memorial	A-I
Ontonagon	Ontonagon County	B-I
Paradise	new	
South Haven	South Haven Area Regional	B-II
Sault Ste. Marie	Sault Ste. Marie Muni-Sanderson	C-II

Goal Achievement Summary: The system of airports identified in Table 23 results in the following level of performance achievement.

Table 23
Goal Achievement Summary: Tourism/Convention Centers

Number of Tier 1 B-II Airports	39
Tourism/Convention Centers Served (percent)	96
Number of Tier 2 Airports	10
Tourism/Convention Centers Served (percent)	99

The 39 airports designated for inclusion in Tier 1 meet the target performance objective of 95 percent. The ten airports included in Tier 2 results in 99 percent of tourism/convention centers being served. All of the tourism/convention not served in Tier 1 or Tier 2 are marginally outside of the 30 minute surface travel time. No tourism/convention center in the state is more than 35 minutes from an airport designated in either Tier 1 or Tier 2.

General Population Access

Goal: Preserve/develop the system of airports necessary to respond to essential/critical aviation needs of the general population.

Background: A basic level of air transportation service to all Michigan residents is important.

System Standards: General population access system standards relate to proximity of an airport to the general population, the minimum classification of airport needed to adequately respond to general population access, and the performance target percent for general population access to be served by those airports. Table 24 summarizes the system standards for general population access.

Table 24
System Standards: General Population Access

Surface Travel Time	45 minutes
Minimum Airport Classification	B-II
Tier 1 Performance Target	95 percent
Tier 2 Performance Target	100 percent

As described previously, the statewide travel demand model is the analytical tool used to determine the proximity of airports to the general population. That tool was used to determine the service area coverage of all candidate airports and the population served by those airports. In summary, general population access in Michigan is provided by 45 minutes surface travel time by airports in the B-II classification. Those airports needed to respond to 95 percent of the general population access are included in Tier 1; with the airports needed to respond to 100 percent of the general population access included in Tier 2.

System Recommendation: To the extent possible, airports that were already developed to the proper minimum airport classification were selected for inclusion in the general population access alternative. Additional airports to be included in Tier 1 were selected based on a combination of remoteness from a previously included airport, and the amount of additional population that would be served. None of the 28 airports included in Tier 1 for general population access would require a reclassification to the B-II category. The 28 airports included in Tier 1 for general population access are shown in Map 8

and identified in Table 25.

Map 8
General Population Access: Tier 1 Airport System

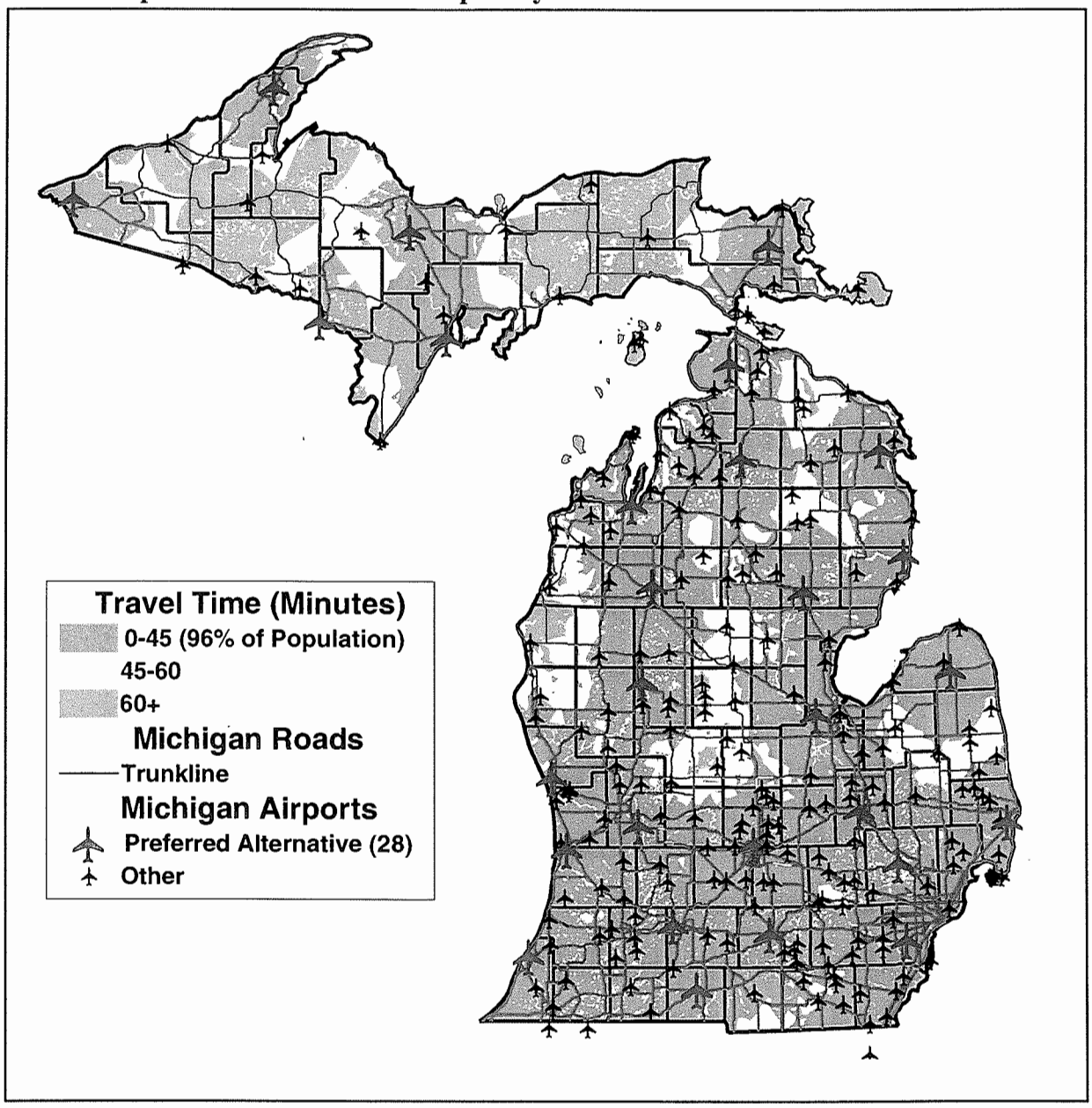


Table 25
Tier 1 Airport System: General Population Access
Minimum Airport Classification Standard: B-II

City	Airport	Current Class
Alpena	Alpena County Regional	D-III
Bad Axe	Huron County Memorial	B-II
Battle Creek	W. K. Kellogg	D-III
Benton Harbor	Southwest Michigan Regional	C-III
Big Rapids	Roben-Hood	B-II
Cadillac	Wexford County	C-II
Coldwater	Branch County Memorial	B-II
Detroit	Detroit Metro Wayne County	D-III
Escanaba	Delta County	D-III
Flint	Bishop International	D-III
Gaylord	Otsego County	C-III
Grand Rapids	Kent County International	D-III
Hancock	Houghton County Memorial	D-III
Holland	Tulip City	C-III
Iron Mountain	Ford	D-III
Ironwood	Gogebic-Iron County	D-III
Jackson	Jackson County-Reynolds	C-III
Lansing	Capital City	D-III
Marquette	Sawyer	D-III
Muskegon	Muskegon County	D-III
Oscoda	Osdoda-Wurtsmith	D-III
Pellston	Pellston Regional of Emmet County	D-III
Pontiac	Oakland County International	D-III
Port Huron	St. Clair County International	C-III
Saginaw	M B S International	D-III
Sault Ste. Marie	Chippewa County International	D-III
Traverse City	Cherry Capital	D-III
West Branch	West Branch Community	C-II

Those airports required to achieve a 100 percent general population coverage are designated in Tier 2 and include the four airports identified in Table 26. All of these airports currently meet the B-II Airport Classification for service to the general population.

Table 26
Tier 2 Airport System: General Population Access
Minimum Airport Classification Standard: B-II

City	Airport	Current Class
Manistee	Manistee County-Blacker	C-II
Manistique	Schoolcraft County	C-II
Marlette	Marlette Township	B-II
Mt. Pleasant	Mt. Pleasant Municipal	C-II

Goal Achievement Summary: The system of airports identified in Table 27 results in the following level of performance achievement.

Table 27
Goal Achievement Summary: General Population Access

Number of Tier 1 B-II Airports	28
General Population Served (percent)	96
Number of Tier 2 Airports	4
General Population Served (percent)	99

The 28 airports designated for inclusion in Tier 1 meet the target performance objective of 95 percent. The four airports included in Tier 2 results in 99 percent of the state's population being served. By extending the service area coverage to 60 minutes rather than 45 minutes virtually all Michigan residents would be have access to an airport included in either Tier 1 or Tier 2.

Land Area Coverage

Goal: Preserve and develop the system of airports necessary to respond to provide basic land area coverage.

Background: General aviation pilots operating their aircraft in Michigan should have access to an airport with a paved runway within 30 miles in the event of a pilot or passenger emergency; or an aircraft malfunction. These airports provide a network of facilities that are reachable in many emergency situations. Airports located in adjacent states near Michigan borders were included in determining land area coverage percentages.

System Standards: Unlike many of the previous system standards where surface travel time is a key variable, with land area coverage the system standard relates uses a 30 mile radius as a key variable. As with the other system goals the target for goal achievement is 95 percent of land area coverage in Tier 1 and 100 percent in Tier 2..

Table 28
System Standards: Land Area Coverage

Surface Travel Distance	30 miles
Minimum Airport Classification	B-I
Tier 1 Performance Target	95 percent
Tier 2 Performance Target	100 percent

System Recommendation: To the extent possible, airports that were already developed to the proper minimum airport classification were selected for inclusion in the land area coverage alternative. Additional airports to be included in Tier 1 were selected based on a combination of remoteness from a previously included airport. Among the 50 airports included in Tier 1 for land area coverage are two airports that would require a reclassification to the B-I category. These airports are...

- ☐ Baraga, new
- ☐ Munising, Hanley Field

The other 48 airports currently meet the B-I airport classification standard. All 50 Tier 1 airports are shown in Map 9 and identified in Table 29.

Map 9

Land Area Coverage: Tier 1 Airport System

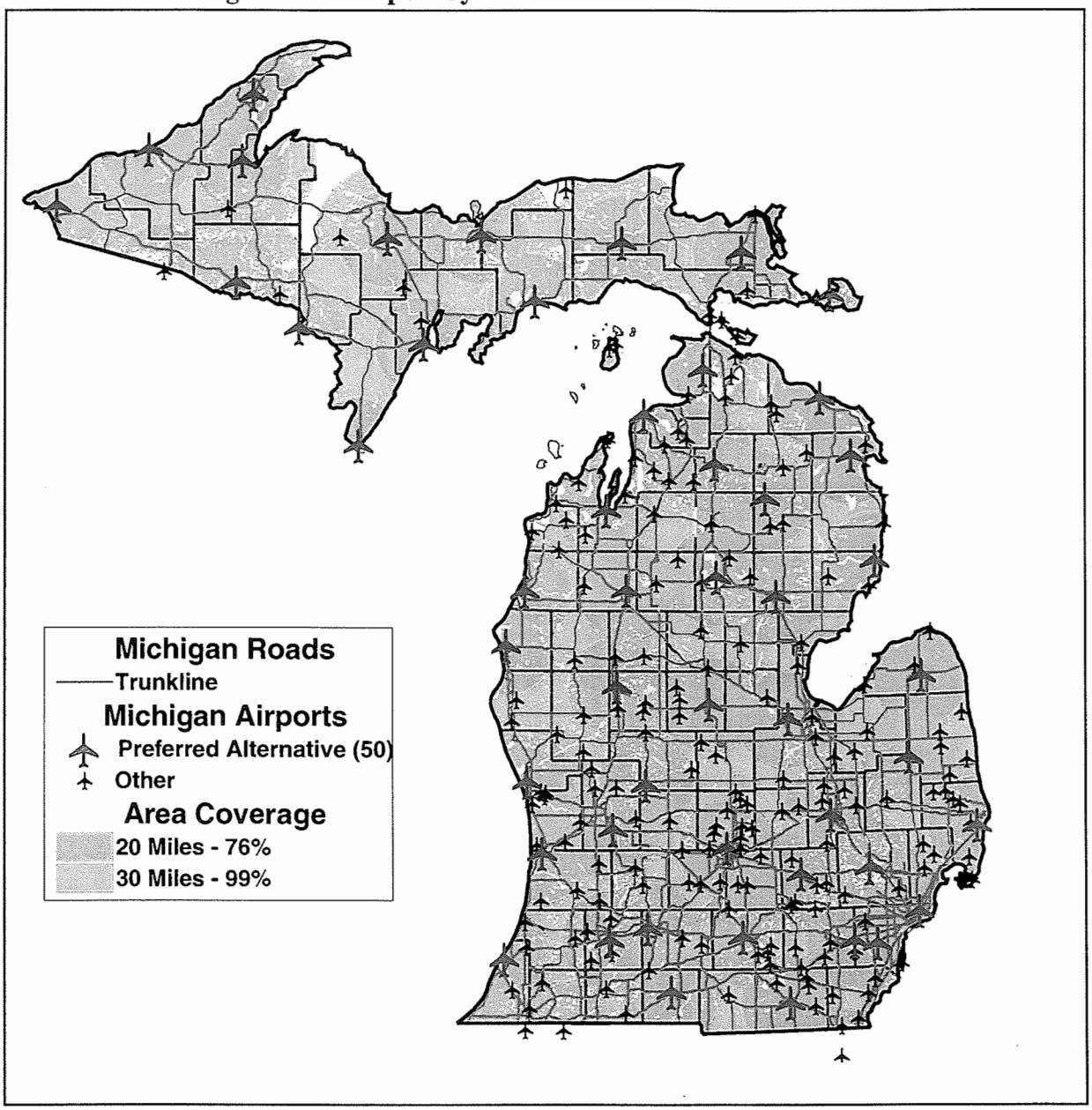


Table 29
Tier 1 Airport System: Land Area Coverage
Minimum Airport Classification Standard: B-I

City	Airport	Current Class
Adrian	Lenawee County	B-II
Alpena	Alpena County Regional	D-III
Bad Axe	Huron County Memorial	B-II
Baraga	new	
Battle Creek	W. K. Kellogg	D-III
Benton Harbor	Southwest Michigan Regional	C-III
Big Rapids	Roben-Hood	B-II
Cadillac	Wexford County	C-II
Charlevoix	Charlevoix Municipal	B-II
Coldwater	Branch County Memorial	B-II
Detroit	Detroit City	C-III
Detroit	Detroit Metro Wayne County	D-III
Detroit	Willow Run	D-III
Drummond Island	Drummond Island	B-II
Escanaba	Delta County	D-III
Flint	Bishop International	D-III
Gaylord	Otsego County	C-III
Grand Rapids	Kent County International	D-III
Greenville	Greenville Municipal	B-II
Hancock	Houghton County Memorial	D-III
Holland	Tulip City	C-III
Houghton Lake	Roscommon County	B-II
Howell	Livingston County	B-II
Iron Mountain	Ford	D-III
Ironwood	Gogebic-Iron County	D-III
Jackson	Jackson County-Reynolds	C-III
Kalamazoo	Kalamazoo/Battle Creek Inter	D-III
Lansing	Capital City	D-III
Lewiston	Garland	B-II
Ludington	Mason County	B-II
Manistee	Manistee County-Blacker	C-II
Manistique	Schoolcraft County	C-II
Marlette	Marlette Township	B-II
Marquette	Sawyer	D-III
Menominee	Menominee-Marinette Twin City	C-III
Mt. Pleasant	Mt. Pleasant Municipal	C-II
Munising	Hanley Field	A-I
Muskegon	Muskegon County	D-III
Newberry	Luce County	B-I
Ontonagon	Ontonagon County	B-I
Oscoda	Osdoda-Wurtsmith	D-III
Pellston	Pellston Regional of Emmet County	D-III

Pontiac	Oakland County International	D-III
Port Huron	St. Clair County International	C-III
Rogers City	Presque Isle County/Rogers City	B-I
Saginaw	M B S International	D-III
Sault Ste. Marie	Chippewa County International	D-III
Stambaugh	Stambaugh	B-I
Traverse City	Cherry Capital	D-III
West Branch	West Branch Community	C-II

Goal Achievement Summary: The system of airports identified in Table 29 results in the following level of performance achievement.

Table 30
Goal Achievement Summary: Land Area Coverage

Number of Tier 1 B-I Airports	50
Land Area Covered (percent)	98
Number of Tier 2 Airports	0
Land Area Covered (percent)	98

The 50 airports designated for inclusion in Tier 1 meet the target performance objective of 95 percent. No additional airports are included in Tier 2 since the practical maximum coverage has been attained by those airports selected in Tier 1. By extending the service area coverage to 40 miles rather than 30 miles virtually all Michigan land areas would have an airport with a paved runway within the coverage area.

Preserve Regional Capacity

Goal: Preserve adequate airport capacity in each region of the state to assure continued effective air transportation.

Background: There are 236 public use airports currently in operation throughout Michigan. At any given time several of these facilities are under pressure from local officials and/or developers to be closed and converted to an alternate use. These pressures are most often exerted on small general aviation airports operating in or adjacent to their service communities. This is a particular concern to airports operating in Southeast Michigan where additional airport closures would threaten overall regional capacity.

From a regional capacity perspective, airports need to continue in public use when...

- ☐ The airport is the only public use facility serving the area and should be preserved because of the access it provides to the community and access it provides the community to outside services.
- ☐ The airport is in an area where regional aircraft capacity is stressed and the facility needs to be preserved to assure continued regional capacity.
- ☐ The airport functions as a reliever to a large airport by allowing lower performance aircraft to utilize the smaller airport rather than the larger airport where the number of operations by high performance aircraft would be inhibited by the smaller aircraft. At very busy airports, a mix of slow aircraft and faster, heavier aircraft severely affects airport operational capacity. Preservation of a smaller airport that would provide an alternative to a very busy airport would benefit both types of aircraft operations.

In Southeast Michigan regional demand currently threatens regional capacity. Recent airport closures and the prospect of additional airport closures continue to put undue stress on regional aviation capacity.

System Standards: Using results of the based aircraft forecast presented in a previous chapter the demand and capacity requirements for each MDOT region are presented in Table 31. By setting the

Table 31
Regional Capacity Requirements

Region	2020 Based Aircraft	Capacity Requirement at...	
		125%	150%
Bay	1,023	1,279	1,535
Grand	879	1,099	1,319
Metro	2,290	2,863	3,435
North	752	940	1,128
Southwest	815	1,019	1,223
Superior	317	396	476
University	1,320	1,650	1,980

Tier 1 threshold at 125 percent of forecasted demand and the Tier 2 capacity threshold at 150 percent of demand it was felt that the system would be able to adequately respond to future needs.

Table 32
System Standards: Preserve Regional Capacity

Within Each Region Aircraft Storage Capacity Should Exceed Demand	
Minimum Airport Classification	B-I
Tier 1 Performance Target (Capacity/Demand)	125 percent
Tier 2 Performance Target (Capacity/Demand)	150 percent

System Recommendation: To the extent possible, airports that were already developed to the proper minimum airport classification were selected for inclusion in the regional capacity alternative. The Metro region is limited in its ability to respond to future capacity needs. Consequently, a number of airports located in counties adjacent to the Metro region were selected for inclusion in this alternative.

All of the 65 airports included in Tier 1 for regional capacity are currently at the B-I classification or higher. These airports are identified in Map 10 and listed in Table 33.

Map 10

Regional Capacity: Tier 1 Airport System

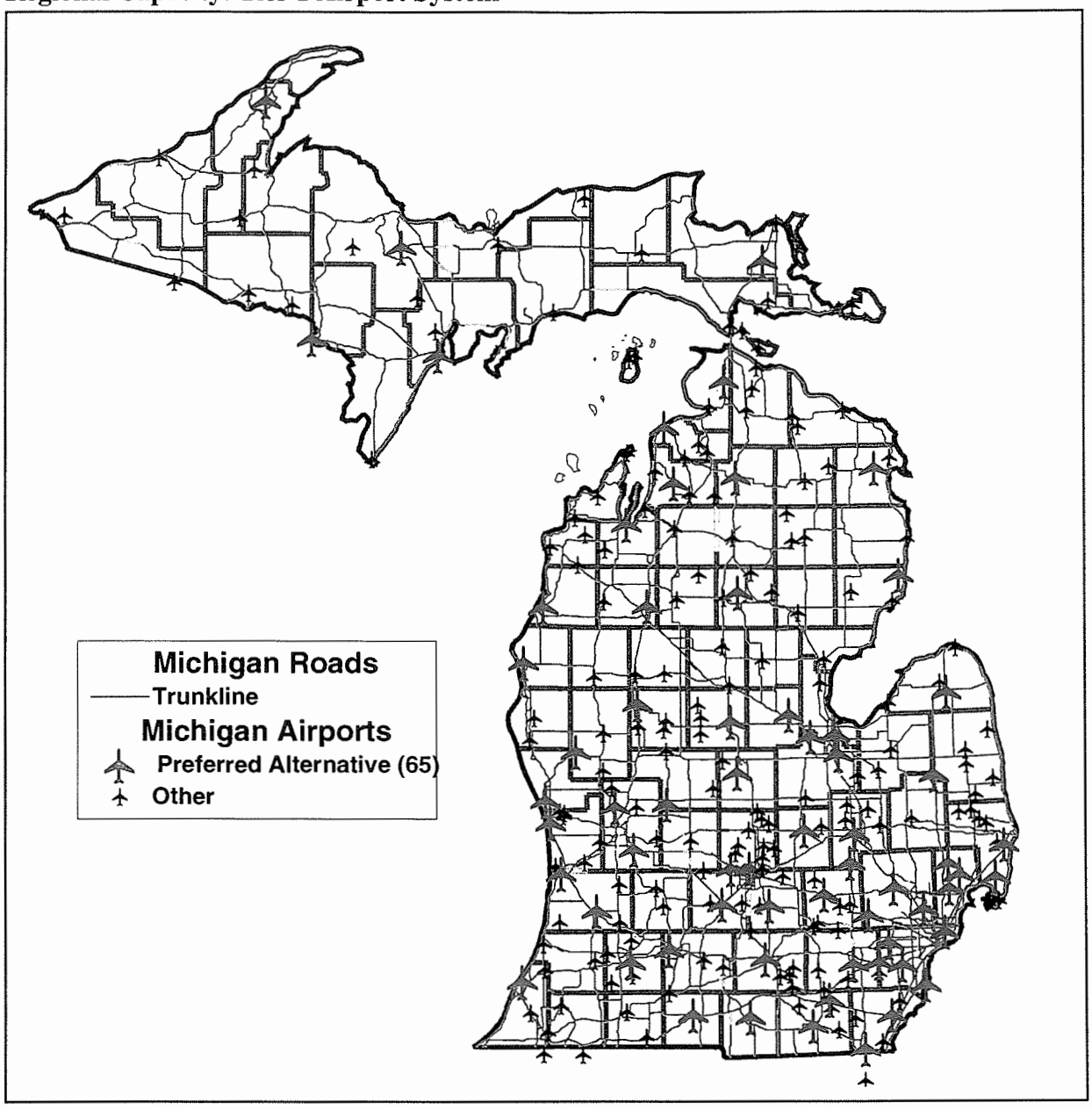


Table 33
Tier 1 Airport System: Regional Capacity
Minimum Airport Classification Standard: B-I

City	Airport	Current Class
Adrian	Lenawee County	B-II
Allegan	Padgham Field	B-II
Alma	Gratiot Community	B-II
Alpena	Alpena County Regional	D-III
Ann Arbor	Ann Arbor Municipal	B-II
Bad Axe	Huron County Memorial	B-II
Battle Creek	W. K. Kellogg	D-III
Bay City	James Clements	B-II
Bellaire	Antrim County	C-II
Benton Harbor	Southwest Michigan Regional	C-III
Big Rapids	Roben-Hood	B-II
Cadillac	Wexford County	C-II
Charlevoix	Charlevoix Municipal	B-II
Charlotte	Fitch H. Beach Municipal	B-II
Coldwater	Branch County Memorial	B-II
Detroit	Berz-Macomb	B-II
Detroit	Detroit City	C-III
Detroit	Grosse Ile Municipal	C-II
Detroit	Detroit Metro Wayne County	D-III
Detroit	Willow Run	D-III
Escanaba	Delta County	D-III
Flint	Bishop International	D-III
Fremont	Fremont Municipal	C-II
Gaylord	Otsego County	C-III
Grand Haven	Memorial Airpark	B-II
Grand Ledge	Abrams Municipal	B-II
Grand Rapids	Kent County International	D-III
Greenville	Greenville Municipal	B-II
Hancock	Houghton County Memorial	D-III
Hillsdale	Hillsdale Municipal	B-II
Holland	Tulip City	C-III
Houghton Lake	Roscommon County	B-II
Howell	Livingston County	B-II
Iron Mountain	Ford	D-III
Jackson	Jackson County-Reynolds	C-III
Kalamazoo	Kalamazoo/Battle Creek Inter	D-III
Lambertville	Toledo Suburban	B-II
Lansing	Capital City	D-III
Linden	Price's	B-I
Ludington	Mason County	B-II

Manistee	Manistee County-Blacker	C-II
Marine City	Marine City	B-I
Marlette	Marlette Township	B-II
Marquette	Sawyer	D-III
Mason	Mason Jewett Field	B-II
Midland	Jack Barstow	B-II
Monroe	Monroe Custer	C-II
Mt. Pleasant	Mt. Pleasant Municipal	C-II
Muskegon	Muskegon County	D-III
New Haven	Macomb	B-I
New Hudson	New Hudson	B-I
Oscoda	Osdoda-Wurtsmith	D-III
Owosso	Owosso Community	B-II
Pellston	Pellston Regional of Emmet County	D-III
Plymouth	Canton-Plymouth-Mettetal	B-I
Pontiac	Oakland County International	D-III
Port Huron	St. Clair County International	C-III
Romeo	Romeo	B-II
Saginaw	Harry W. Browne International	C-II
Saginaw	M B S International	D-III
Sault Ste. Marie	Chippewa County International	D-III
Sparta	Sparta	B-I
Tecumseh	Meyers-Diver's	B-I
Traverse City	Cherry Capital	D-III
Troy	Oakland/Troy	B-I

The 16 airports included in Tier 2 are identified in Table 34. These additional facilities are needed to achieve the 150 percent system standard.

Table 34
Tier 2 Airport System: Regional Capacity
Minimum Airport Classification Standard: B-I

City	Airport	Current Class
Atlanta	Atlanta Municipal	B-I
Baldwin	Baldwin Municipal	B-II
Caro	Caro Municipal	B-II
Dowagiac	Dowagiac Municipal	C-II
Evart	Evart Municipal	B-I
Gladwin	Gladwin Zettel Memorial	B-II
Grayling	Grayling Army Airfield	C-II
Ionia	Ionia County	B-II
Jenison	Riverview	B-I
Lakeview	Lakeview-Griffith Field	B-I
Marshall	Brooks Field	B-I
Sturgis	Kirsch Municipal	C-II
Three Rivers	Three Rivers Municipal, Dr Haines	B-I
West Branch	West Branch Community	C-II
White Cloud	White Cloud	B-I
Zeeland	Ottawa Executive	B-I

Goal Achievement Summary: The system of airports identified in Table 35 results in the following level of performance achievement.

Table 35
Goal Achievement Summary: Regional Capacity

Number of Tier 1 B-I Airports	65
MDOT Regions Served (percent)	100
Number of Tier 2 Airports	16
MDOT Regions Served (percent)	100

The 65 airports designated for inclusion in Tier 1 result in each of the seven MDOT regions meeting the target of 125 percent of based aircraft demand. The 16 additional airports included in Tier 2 results in each of the regions meeting the target of 150 percent of based aircraft demand.

Serve Isolated Areas

Goal: Support airports capable of providing essential transportation services during those times of the year when other transportation modes are unavailable to seasonally isolated areas.

Background: In 1996 the State Transportation Commission and the Michigan Aeronautics Commission adopted an *Island Transportation Policy*. This policy indicated that year round air access between the mainland and each of the populated Great Lakes Islands that were seasonally isolated due to weather conditions was important. Seven islands meet this criteria – Beaver, Bois Blanc, Drummond, Harsens, Mackinac, Neebish, and Sugar islands.

System Standards: A year round airport with a paved primary runway is the preferred facility to provide the necessary all weather link to the mainland. Recognizing that not all islands are capable of developing an appropriate airport facility, in some instances a helipad can be developed to provide the necessary mainland link.

Table 36
System Standards: Isolated Areas

Surface Travel Time	on the island
Minimum Airport Classification	B-I or Heliport
Tier 1 Performance Target	100 percent

Recommended System: Three of the seven islands currently have an appropriate airport facility – Beaver, Drummond, and Mackinac islands. Two additional islands, Bois Blanc and Harsens, have airports with turf runways that could be reclassified to B-I. The remaining two islands, Neebish and Sugar, do not have a public use airport and given severe physical constraints would be candidates for development of heliports.

Table 37
Tier 1 Airport System: Isolated Areas
Minimum Airport Classification Standard: B-I or Heliport

Island	Airport	Current Class
Beaver	Beaver Island	B-II
Drummond	Drummond Island	B-II
Harsens	Harsens Island	A-I
Mackinac	Mackinac Island	B-II
Neebish	new	Heliport
Bois Blanc	Bois Blanc Island	A-I
Sugar	new	Heliport

Goal Achievement Summary: The system of airports identified in Table 38 results in the following level of performance achievement.

Table 38
Goal Achievement Summary: Isolated Areas

Number of Tier 1 B-I Airports or Helipads	7
Islands Served (percent)	100

The five airports and two helipads designated for inclusion in Tier 1 result in each of the seven seasonally isolated populated islands being served.

Goal Achievement Summary

Table 39 provides a summary of how the recommended system responds to each of the seven MASP system goals. In each case the recommended system meets or exceeds the target goal for Tier 1 airports. The Tier 1 target for each of the first five system goals is 95 percent. For Regional Capacity and Isolated Areas the target is 100 percent.

Although the Tier 2 target of 100 percent is reached for just two of the system goals, the system identified represents a reasonable and practical optimal system in Michigan. Generally, in those instances where the Tier 2 goal is not met, those areas not served are marginally outside of the service area. In some cases it is far more prudent to accept a deficiency than attempt to improve an airport with severe site limitations, or build a new airport in a physically constrained location.

Table 39
Goal Achievement Summary

Goal	Tier 1		Tier 2	
	Airports	Percent Served	Airports	Percent Served
Population Centers	32	95	10	99+
Business Centers	35	95	15	97
Tourism/Convention Centers	39	96	10	99
General Population Access	28	96	4	99
Land Area Coverage	50	98	0	98
Regional Capacity	65	100	16	100
Isolated Areas	7	100	0	100

System Recommendation Summary

All of the airports designated in Tier 1 for each goal should be developed to their full and appropriate classification. In many cases this means development efforts will focus completing requirements for an airport's current classification. In a limited number of cases system recommendations indicate that an airport should be

reclassified to a higher class. Airport development efforts will focus on meeting the requirements for that higher classification. The 16 Tier 1 airports recommended for reclassification to a higher class are identified in Table 40. Reclassifications to the C-II category are indicated for seven of these airports based on population center and/or business center goals. Reclassifications to the B-II category are recommended for five of these airports based on tourism center and/or general population access goals. The remaining four reclassifications are based on the serve isolated islands goal and are call for either a reclassification to the B-I category or development of a new helipad.

Table 40
System Reclassification Summary

City	Airport	Current Class	Future Class
Adrian	Lenawee County	B-II	C-II
Bad Axe	Huron County Memorial	B-II	C-II
Baraga	new		B-II
Big Rapids	Roben-Hood	B-II	C-II
Bois Blanc	Bois Blanc Island	A-I	B-I
Charlevoix	Charlevoix Municipal	B-II	C-II
Frankfort	Dow Memorial	B-I	B-II
Greenville	Greenville Municipal	B-II	C-II
Harsens Island	Harsens Island	A-I	B-I
Hillsdale	Hillsdale Municipal	B-II	C-II
Howell	Livingston County	B-II	C-II
Munising	Hanley Field	A-I	B-II
Neebish Island	new		Heliport
Rogers City	Presque Isle County/Rogers City	B-I	B-II
St. Ignace	Mackinac County	B-I	B-II
Sugar Island	new		Heliport

Composite Alternative

The following section identifies the airports that are designated for inclusion in Tier 1, Tier 2, or Tier 3.

Tier 1 Airports

The following table identifies the 88 current or proposed airports that are recommended for inclusion in Tier 1 in response to one or more of the seven system goals.

Table 41
Tier 1 Airport System: Composite Alternative **1=Tier 1 2=Tier 2**

City	Airport	Curr MASP Class	System Goal						
			Pop Cent (C-II)	Bus Cent (C-II)	Tour/ Conv (B-II)	Gen Pop (B-II)	Land Area (B-I)	Reg Cap (B-I)	Isol (B-I)
Adrian	Lenawee County	B-II	1	1			1	1	
Allegan	Padgham Field	B-II						1	
Alma	Gratiot Community	B-II						1	
Alpena	Alpena County Regional	D-III	1	1	1	1	1	1	
Ann Arbor	Ann Arbor Municipal	B-II		2				1	
Bad Axe	Huron County Memorial	B-II		1		1	1	1	
Baraga	new	na			1		1		
Battle Creek	W.K. Kellogg	D-III	1	1		1	1	1	
Bay City	James Clements	B-II						1	
Beaver Island	Beaver Island	B-II			1				1
Bellaire	Antrim County	C-II			1			1	
Benton Harbor	Southwest Michigan Reg.	C-III	1	1		1	1	1	
Big Rapids	Roben-Hood	B-II	2	1	1	1	1	1	
Bois Blanc	Bois Blanc Island	A-I							1
Cadillac	Wexford County	C-II	1	1	1	1	1	1	
Charlevoix	Charlevoix Municipal	B-II		1	1		1	1	
Charlotte	Fitch H. Beach Municipal	B-II						1	
Coldwater	Branch County Memorial	B-II	2	2		1	1	1	

Table 41
Tier 1 Airport System: Composite Alternative **1=Tier 1 2=Tier 2**

City	Airport	Curr MASP Class	System Goal						
			Pop Cent (C-II)	Bus Cent (C-II)	Tour/ Conv (B-II)	Gen Pop (B-II)	Land Area (B-I)	Reg Cap (B-I)	Isol (B-I)
Detroit	Berz-Macomb	B-II						1	
Detroit	Detroit City	C-III	1	1	1		1	1	
Detroit	Grosse Ile Municipal	C-II						1	
Detroit	Detroit Metro Wayne Co.	D-III	1	1	1	1	1	1	
Detroit	Willow Run	D-III	1	1			1	1	
Drummond Island	Drummond Island	B-II			1		1		1
Escanaba	Delta County	D-III	1	1	1	1	1	1	
Flint	Bishop International	D-III	1	1	1	1	1	1	
Frankfort	Dow Memorial	B-I			1				
Fremont	Fremont Municipal	C-II	2	1	2			1	
Gaylord	Otsego County	C-III	1	1	1	1	1	1	
Grand Haven	Memorial Airpark	B-II						1	
Grand Ledge	Abrams Municipal	B-II						1	
Grand Rapids	Kent County International	D-III	1	1	1	1	1	1	
Grayling	Grayling Army Airfield	C-II		1	1			2	
Greenville	Greenville Municipal	B-II	1	1			1	1	
Hancock	Houghton County Mem.	D-III	1	1	1	1	1	1	
Harbor Springs	Harbor Springs Municpal	B-II			1				
Harsen's Island	Harsen's Island	A-I							1
Hillsdale	Hillsdale Municipal	B-II	2	1				1	
Holland	Tulip City	C-III	1	1	1	1	1	1	
Houghton Lake	Roscommon County	B-II					1	1	
Howell	Livingston County	B-II	1	1			1	1	
Iron Mountain	Ford	D-III	1	2	1	1	1	1	
Ironwood	Gogebic-Iron County	D-III	1	2	1	1	1		

Table 41
Tier 1 Airport System: Composite Alternative 1=Tier 1 2=Tier 2

City	Airport	Curr MASP Class	System Goal						
			Pop Cent (C-II)	Bus Cent (C-II)	Tour/ Conv (B-II)	Gen Pop (B-II)	Land Area (B-I)	Reg Cap (B-I)	Isol (B-I)
Jackson	Jackson County-Reynolds	C-III	1	1	1	1	1	1	
Kalamazoo	Kalamazoo/Battle Creek Int	D-III	1	1	1		1	1	
Lambertville	Toledo Suburban	B-II						1	
Lansing	Capital City	D-III	1	1	1	1	1	1	
Lewiston	Garland	B-II					1		
Linden	Price's	B-I						1	
Ludington	Mason County	B-II	2		1		1	1	
Mackinac Island	Mackinac Island	B-II			1				1
Manistee	Manistee County-Blacker	C-II	1	1	2	2	1	1	
Manistique	Schoolcraft County	C-II			1	2	1		
Marine City	Marine City	B-I						1	
Marlette	Marlette Township	B-II				2	1	1	
Marquette	Sawyer	D-III	1	1	1	1	1	1	
Mason	Mason Jewett Field	B-II						1	
Menominee	Menominee-Marinette Twin City	C-III	1				1		
Midland	Jack Barstow	B-II						1	
Monroe	Monroe Custer	C-II	2					1	
Mt. Pleasant	Mt. Pleasant Municipal	C-II	1	1	1	2	1	1	
Munising	Hanley Field	A-I			1		1		
Muskegon	Muskegon County	D-III	1	1	1	1	1	1	
Neebish Island	new	na							1
New Haven	Macomb	B-I						1	
New Hudson	New Hudson	B-I						1	
Newberry	Luce County	B-I			2		1		
Ontonagon	Ontonagon County	B-I			2		1		

Table 41
Tier 1 Airport System: Composite Alternative 1=Tier 1 2=Tier 2

City	Airport	Curr MASP Class	System Goal						
			Pop Cent (C-II)	Bus Cent (C-II)	Tour/ Conv (B-II)	Gen Pop (B-II)	Land Area (B-I)	Reg Cap (B-I)	Isol (B-I)
Oscoda	Osdoda-Wurtsmith	D-III			1	1	1	1	
Owosso	Owosso Community	B-II						1	
Pellston	Pellston Reg of Emmet Co.	D-III	1			1	1	1	
Plymouth	Canton-Plymouth-Mettetal	B-I						1	
Pontiac	Oakland County Intl	D-III	1	1	1	1	1	1	
Port Huron	St. Clair County Intl	C-III	1	1	1	1	1	1	
Rogers City	Presque Isle Co/Rogers City	B-I		2	1		1		
Romeo	Romeo	B-II	2					1	
Saginaw	Harry W. Browne	C-II						1	
Saginaw	M B S International	D-III	1	1	1	1	1	1	
Saint Ignace	Mackinac County	B-I			1				
Sault Ste. Marie	Chippewa County Intl	D-III	1		1	1	1	1	
Sparta	Sparta	B-I	2	2				1	
Stambaugh	Stambaugh	B-I					1		
Sturgis	Kirsch Municipal	C-II	2	1				2	
Sugar Island	new	na							1
Tecumseh	Meyers-Diver's	B-I						1	
Traverse City	Cherry Capital	D-III	1	1	1	1	1	1	
Troy	Oakland/Troy	B-I						1	
West Branch	West Branch Community	C-II		1		1	1	2	

Tier 2 Airports

The following table identifies the 25 airports that are recommended for inclusion in Tier 2. None of these airports were identified for inclusion in Tier 1 for any of the seven system goals.

Table 42
Tier 2 Airport System: Composite Alternative **2=Tier 2**

City	Airport	Curr MASP Class	System Goal						
			Pop Cent (C-II)	Bus Cent (C-II)	Tour/ Conv (B-II)	Gen Pop (B-II)	Land Area (B-I)	Reg Cap (B-I)	Isol (B-I)
Atlanta	Atlanta Municipal	B-I						2	
Baldwin	Baldwin Municipal	B-II						2	
Caro	Caro Municipal	B-II		2				2	
Caseville	new	na			2				
Cheboygan	Cheboygan City-County	B-II		2					
Clare	Clare Municipal	B-I			2				
Dowagiac	Dowagiac Municipal	C-II						2	
Evart	Evart Municipal	B-I						2	
Gladwin	Gladwin Zettel Memorial	B-II		2				2	
Hart-Shelby	Oceana County	B-I		2					
Hastings	Hastings City/Barry County	B-II	2	2					
Ionia	Ionia County	B-II						2	
Jenison	Riverview	B-I						2	
Lakeview	Lakeview-Griffith	B-I						2	
Lapeer	DuPont-Lapeer	B-I		2					
Marshall	Brooks Field	B-I						2	
Niles	Jerry Tyler Memorial	B-II		2					
Northport	Woolsey Memorial	A-I			2				
Paradise	new	na			2				
Sandusky	Sandusky City	B-I		2					
Sault Ste. Marie	Sault Ste. Marie Muni-Sanderson	C-II		2	2				
South Haven	South Haven Area Regional	B-II			2				
Three Rivers	Three Rivers Municipal, Dr. Haines	B-I						2	
White Cloud	White Cloud	B-I						2	
Zeeland	Ottawa Executive	B-I						2	

Tier 3 Airports

The remaining public use airports are all designated for inclusion in Tier 3. Almost all of these airports are either privately owned and/or have turf primary runways.

Airport Development Standards

AIRPORT DEVELOPMENT STANDARDS

Airport development standards are needed to compare existing airport facilities to a standard development template. This enables the ***MASP 2000*** to identify airport development items necessary to respond to system deficiencies. In the System Description chapter, six ***MASP 2000*** Approach Category/Design Group combinations were identified. Each of these has its own development standard.

Tier 1 Airport Development Standards

In the Goals and Objectives chapter facility goals for each airport component were identified. These facility goals relate to the primary runway system, pavement condition, all-weather access, year-round access, basic pilot and aircraft services, zoning, and navigational aids. Each airport classification has a set of development standards for each of these facility elements. These development standards are identified in Table 44 for Tier 1 airports.

Tier 2 Airport Development Standards

Airport development standards are identical to Tier 1 standards except for the requirements for a current airport zoning plan and an active zoning board.

Tier 3 Airport Development Standards

Airport development standards are identical to Tier 2 standards except for the requirements for weather reporting, a weather briefing system, communications, snow removal, open through the spring, hangars, pilot shelter, and staffing.

Table 43
Airport Development Standards

Airport Development Item		Airport Classification					
		D-III	**C-III**	**C-II**	**B-II**	**B-I**	**A-I**
Primary Runway System	*Length (feet)*	6,000+	5,000+	5,000	4,300	3,500	2,500
	Width (feet)	150	100	100	75	75	100
	Surface Type	Paved	Paved	Paved	Paved	Paved	Turf
	Lighting System	HIRL	HIRL	MIRL	MIRL	MIRL	Marker
	Taxi System	Full Parallel			Full Par if 20,000+ Ops		None
	Visual Approach Aid	VASI/PAPI	VASI/PAPI	VASI/PAPI	VASI/PAPI	VASI/PAPI	None
Pavement Condition Indices	*Primary Runway*	70	60	60	60	60	n/a
	Primary Taxi System	60	55	55	50	50	n/a
	Terminal Apron/Ramp	55	55	55	50	50	n/a
All-Weather Access	*Weather Reporting*	Yes	Yes	Yes	Yes	Yes	Yes
	Weather Briefing Sys	Yes	Yes	Yes	Yes	Yes	Yes
	Ground Asst Comm	Yes	Yes	Yes	Yes	Yes	Yes
Year-Round Access	*Snow Removal*	Yes	Yes	Yes	Yes	Yes	Yes
	Open Through Spring	Yes	Yes	Yes	Yes	Yes	Yes
Basic Pilot and Aircraft Services	*Staffing*	Yes	Yes	Yes	Yes	Yes	Yes
	Fuel	Yes	Yes	Yes	Yes	Yes	No
	Telephone	Yes	Yes	Yes	Yes	Yes	No
	Restrooms	Yes	Yes	Yes	Yes	Yes	No
	Pilot Shelter	Yes	Yes	Yes	Yes	Yes	Yes
	Aircraft Maintenance	Yes	Yes	Yes	Yes	No	No
	Aircraft Repair	Yes	Yes	Yes	Yes	No	No
	Hangar	Yes	Yes	Yes	Yes	Yes	Yes
Zoning	*Active Board*	Yes	Yes	Yes	Yes	Yes	Preferred
	Current Plan	Yes	Yes	Yes	Yes	Yes	Preferred
Misc. Navigational Aids	*REIL*	Yes	Yes	Yes	Yes	Yes	No
	Rotating Beacon	Yes	Yes	Yes	Yes	Yes	No
	Segmented Circle	Yes	Yes	Yes	Yes	Yes	No
	Lighted Wind Ind	Yes	Yes	Yes	Yes	Yes	No
	Instrument Approach	Precision	Precision	Precision	Non-Prec	Visual	Visual
Surface Access	*Road Access*	Arterial	Arterial	Arterial	Collector	Collector	Local
	Public Transportation	Yes	Yes	Yes	No	No	No

Notes: At A-I airports an unlit wind indicator is acceptable.

Airport Development Standards Notes

Pavement Condition Indices. The Michigan Department of Transportation since 1987 has been conducting field inspections of pavements at airports throughout Michigan on a routine basis and reporting conditions of pavements using a Pavement Condition Index (PCI) methods initially developed by the US Air Force. The PCI values for pavements range from a high of 100 for new pavements without any defects to a low of 0 for completely failed pavements. Different threshold values for "good" and "poor" apply for different classifications of airports and for different components of an airport - runway, taxiway, and apron.

Appropriate Surface Access. Airports in the state airport system should have appropriate highway and public transportation access responsive to both the volume and type of vehicular traffic requiring airport access. Airport surface access should be provided by a functional class of roadway suited to vehicle types/densities operating at a given class of airport. At some classes of airport, public or private means of transit should also be an alternative. The following describes the different types of roads...

- ☐ Arterial roads carry long distance, through-travel movements. They also provide access to important traffic generators Arterial roads include interstate and other freeways; state routes between large and small cities; and important surface streets in large and small cities.
- ☐ Collector roads provide more access to property than do arterial roads. Collectors also funnel traffic from residential or rural areas to arterial roads. These roads include county, farm-to-market roads; and various connecting streets in large and small cities.
- ☐ Local roads primarily provide access to property. These roads typically include residential streets; and lightly-traveled county roads.

Description of Existing Michigan Airport System Facilities

A description and assessment of the existing Michigan airport system provides a variety of inputs into development of the Michigan Airport System Plan. The primary purposes of this assessment are...

> ***Establishment of baseline operational data*** useful in developing forecasts of based aircraft and operations.
>
> ***Establishment of baseline airport facility data*** that will be useful in identifying current airport and system deficiencies.
>
> ***Establishment of an evaluation mechanism*** for measuring how effectively MASP airports are responding to identified goals and objectives.

The key product of this assessment of the Michigan airport system is:

> ***A current and dynamic inventory of airport features*** as they relate to MASP airport classification and airport development standards.

Data Bases

There are currently two active data bases within MDOT where aviation related data is maintained. The *Transportation Management System* (TMS) is the official department repository for a vast array of data on all modes including aviation. The TMS has historically been the data source for Michigan Airport System Planning efforts. Analysis tools for the ***MASP 2000*** utilize the TMS. The *Airport Information Management System* (AIMS) maintains aviation data and is an effective tool in communicating with the FAA and aviation agencies in other states. There is a continuing need to maintain both the TMS and AIMS in the future. Therefore, in support of the ***MASP 2000*** effort, a link between these two systems has been developed. This results in one official data set and eliminates the existence of two "official" independent versions the same data. Data items currently residing in both systems will now be maintained, by agreement, in either the TMS or AIMS with the linkage between systems permitting an ongoing update of the data in each system.

Airport Facility Data Elements

The following summarizes the data elements included in the system plan in support of airport facility objectives. Each of these items relates to a specific facility goal and/or performance measure. As such, they need to be included in the ***MASP 2000*** inventory and will be monitored on a continuing basis to permit an ongoing assessment of the system as it relates to goals and performance measures.

Complete and Adequate Primary Runway System - Includes primary runway length, width, surface type, lighting system, taxi system, safety areas, and runway visual approach aid including a Precision Approach Path Indicator (PAPI), Visual Approach Slope Indicator (VASI) or equivalent. This data is gathered by airport inspectors, maintained by AERO in the AIMS, and transferred to the TMS periodically.

Pavement Condition Indices - Includes the current condition of the primary runway, access/parallel taxiway, and terminal apron. This data is gathered through field inspections, processed by BTP, and current year PCI values entered into the TMS.

All Weather Access System - Includes federal and/or state weather reporting systems such as Automated Weather Observation Systems (AWOS) located at select airports throughout Michigan, weather briefing systems, and ground assist radio communications such as a Ground Communication Outlet (GCO). This data is maintained by AERO in the AIMS, and transferred to the TMS periodically.

Year Round Access - Includes an indicator of whether the airport has snow removal, and a primary runway surface unaffected by spring thaw conditions. This data is maintained by AERO in the AIMS, and transferred to the TMS periodically.

Basic Pilot and Aircraft Services - Includes basic pilot services such as airport staffing, telephones, restrooms and pilot/passenger shelters that should be available at select categories of airports. This category also includes basic aircraft services such as fuel, aircraft maintenance, aircraft repair services, and hangar/aircraft storage services that should be available at select categories of airports. This data is maintained by AERO in the AIMS, and transferred to the TMS periodically.

Airport Zoning - Includes the presence of a current airport zoning plan, and an active airport zoning board at select categories of airports. This data is maintained by AERO in the AIMS, and transferred to the TMS periodically.

Instrument Approaches - Includes an indicator of whether the primary runway is served by a visual approach, non-precision approach, or precision approach. This data is maintained by AERO in the AIMS, and transferred to the TMS periodically.

Miscellaneous Navigational Aids - Includes an indicator of whether the primary runway or airport has Runway End Identifier Lights (REILS), a rotating beacon, segmented circle, a lighted wind indicator, and type of instrument approach including a precision approach (or GPS-3), non-precision approach (GPS-2), or none. This data is maintained by AERO in the AIMS, and transferred to the TMS periodically.

Facility Goals

FACILITY GOALS

The Michigan Airport System Plan not only identifies the location and appropriate airport classification of those airport facilities that need to be included in the ***MASP 2000***, but also the development items that are basic to a properly developed system. The following section describes those facility elements that are crucial to a properly developed airport system. Included in each section is a discussion of the facility item, a figure displaying for each system goal, the number of airports meeting all the facility standards and those with deficiencies, and a table listing the number of airports meeting each component of a particular facility goal.

The ***MASP 2000*** does not attempt to identify which facility goals are more important relative to other facility goals. Nor does it attempt establish a the relative importance among system goals. Rather, establishing a hierarchy between system goals and facility goals will occur in an airport investment strategy which will be developed subsequent to completion of the ***MASP 2000.***

Complete and Adequate Primary Runway System

Airports designated as Tier 1 in the state airport system should have a complete and adequate primary runway system including: a paved runway of appropriate length and width; an appropriate runway lighting system; access from the terminal/ramp area to the primary runway; a parallel taxiway when appropriate based on airport classification and/or activity level; and clear approaches with the appropriate glide slope.

Figure 9

1999 Facility Goal Achievement:
Complete and Adequate Primary Runway System

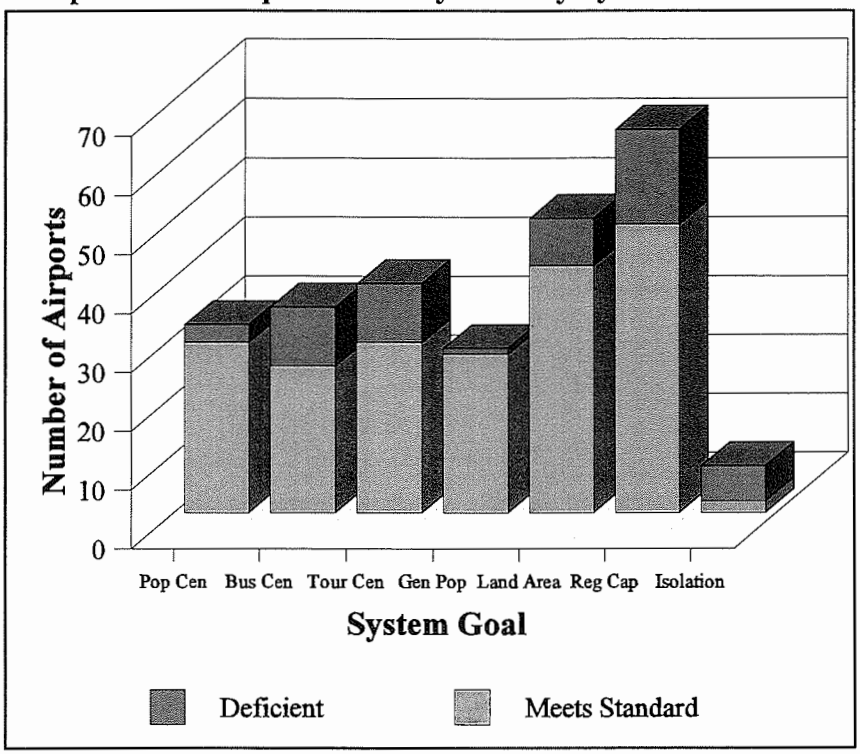


Table 44
1999 Facility Goal Achievement: Complete and Adequate Primary Runway System
Number of Tier 1 Airports Meeting the Facility Standard

Item	System Goal						
	Population Center	Business Center	Tourism Center	General Population	Land Area	Regional Capacity	Isolation
Number Tier 1 Airports	32	35	39	28	50	65	7
Runway Length	29	28	30	28	47	57	3
Runway Width	29	27	35	28	47	55	2
Runway Surface	32	35	37	28	48	65	3
Runway Lights	32	35	37	28	47	58	4
Runway Approach	31	34	34	27	42	54	2
Parallel Taxiway	32	28	37	28	49	59	5

The largest number of deficiencies occur at business center, tourism/convention center, and regional capacity airports with

runway length and runway width not meeting the facility standard for that airport classification.

Pavements in "Good" Condition

Airports designated as Tier 1 in the state airport system should have pavements in their *primary runway system* in "good" condition.

Figure 10
1999 Facility Goal Achievement: Pavement Condition

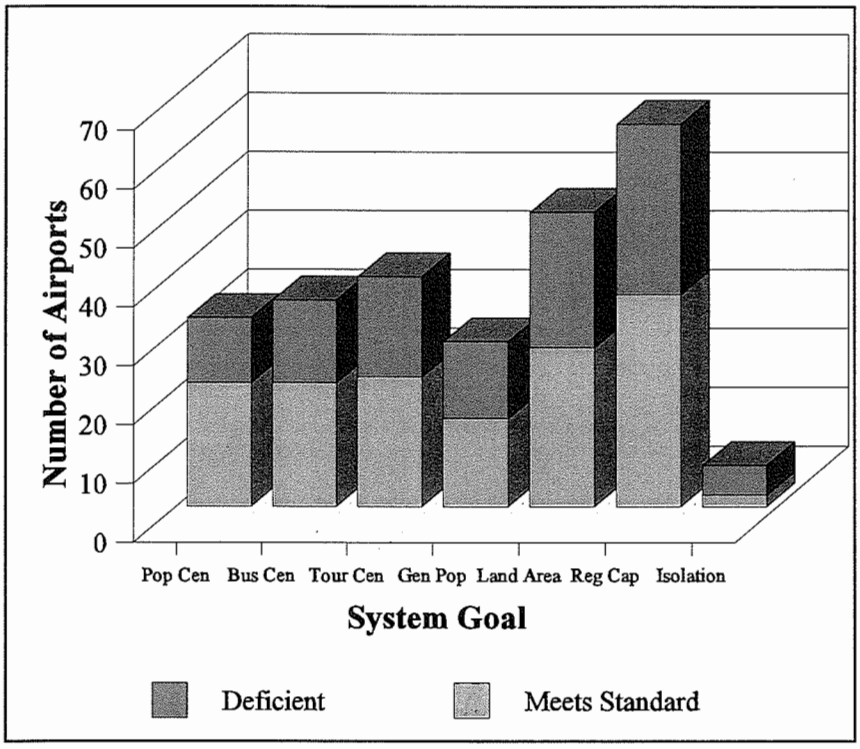


Table 45
1999 Facility Goal Achievement: Pavement Condition
Number of Tier 1 Airports Meeting the Facility Standard

Pavement Component	System Goal						
	Population Center	Business Center	Tourism Center	General Population	Land Area	Regional Capacity	Isolation
Number Tier 1 Airports	32	35	39	28	50	65	7
Primary Runway	24	26	25	18	33	45	2
Primary Taxiway System	25	25	25	20	35	45	2
Terminal Apron	25	27	28	21	36	47	2

Pavement condition at Tier 1 airports for each system goal is a concern. Primary runways meet the facility standard less than 75 percent of the time. Preservation of airport pavement infrastructure has been a point of emphasis in recent years and will continue to be emphasized in years to come.

All Weather Access

Airports designated as Tier 1 or Tier 2 in the state airport system should have all weather access. This includes an All Weather Observation System (AWOS) or equivalent, a Pilot Informantion Center (PIC), and a Ground Communication Outlet (GCO) or equivalent.

Figure 11
1999 Facility Goal Achievement: All Weather Access

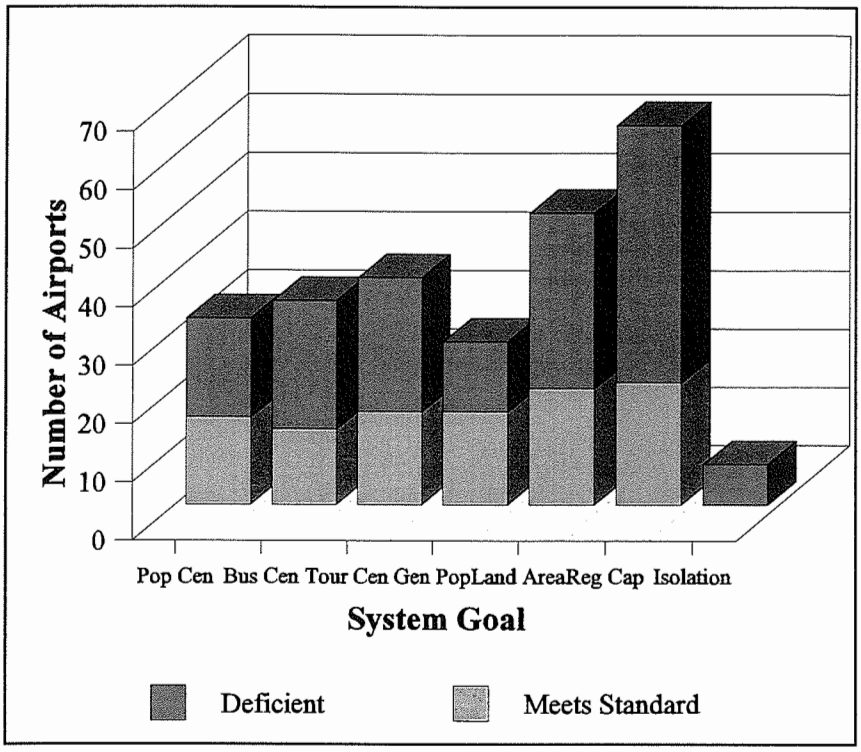


Table 46
1999 Facility Goal Achievement: All Weather Access
Number of Tier 1 Airports Meeting the Facility Standard

Component	System Goal						
	Population Center	Business Center	Tourism Center	General Population	Land Area	Regional Capacity	Isolation
Number Tier 1 Airports	32	35	39	28	50	65	7
AWOS	31	30	30	27	39	42	1
Pilot Information Center	18	17	20	19	25	31	1
Ground Comm Outlet	26	25	24	24	33	36	0

The All Weather Access program is a comparatively new program within AERO. As such, it is not surprising that particularly with the pilot information center and ground communication outlet additional work needs to be done. The Airport Investment Strategy will evaluate how vigorously these needs can be addressed and establish

a priority for responding to these needs.

Year-Round Access

Airports designated as Tier 1 in the state airport system should be open throughout the year. This means the airport should be able to clear the runway of snow in a timely fashion, and have at least one paved runway that would not be affected by spring thaw conditions.

Figure 12
1999 Facility Goal Achievement: Year Round Access

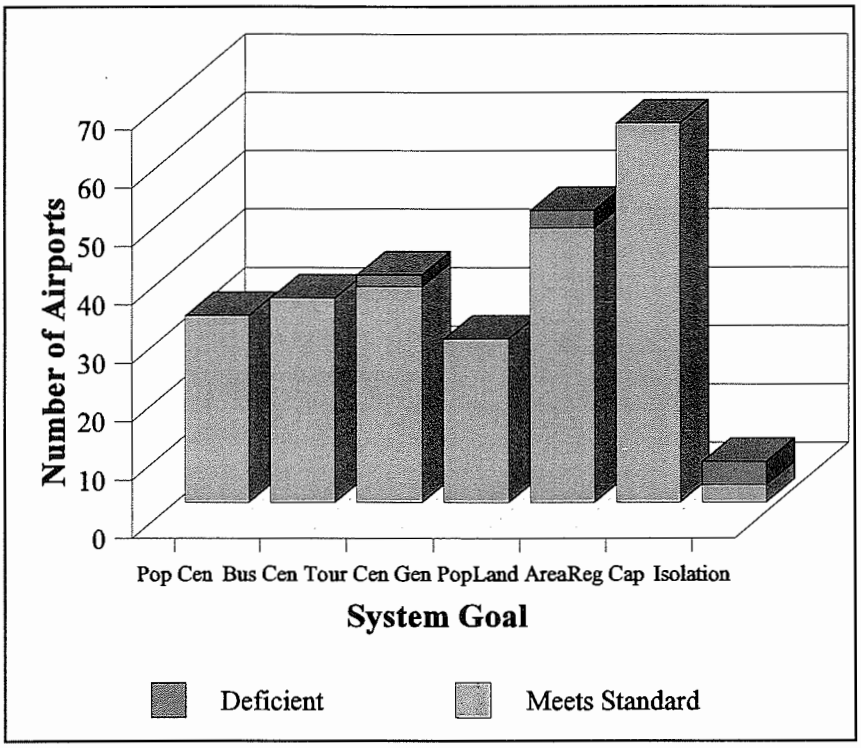


Table 47
1999 Facility Goal Achievement: Year Round Access
Number of Tier 1 Airports Meeting the Facility Standard

Component	System Goal						
	Population Center	Business Center	Tourism Center	General Population	Land Area	Regional Capacity	Isolation
Number Tier 1 Airports	32	35	39	28	50	65	7
Snow Removal	32	35	37	28	47	65	4
Open Through Spring	32	35	37	28	48	65	3

There are only minor deficiencies in meeting the year round access facility standards. Almost all Tier 1 airports have a snow removal plan and are able to stay open through the spring thaw period.

Basic Pilot and Aircraft Services

Airports designated as Tier 1 in the state airport system should have an appropriate range of pilot/aircraft services.

Figure 13
1999 Facility Goal Achievement: Basic Pilot and Aircraft Services

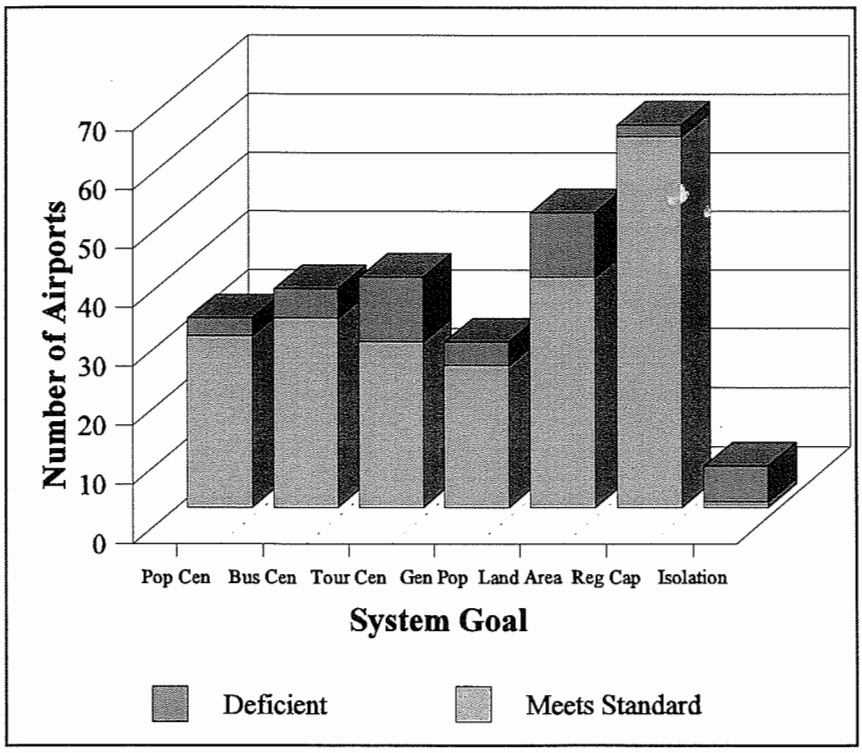


Table 48
1999 Facility Goal Achievement: Basic Pilot and Aircraft Services
Number of Tier 1 Airports Meeting the Facility Standard

Component	System Goal						
	Population Center	Business Center	Tourism Center	General Population	Land Area	Regional Capacity	Isolation
Number Tier 1 Airports	32	35	39	28	50	65	7
Staffing	32	34	33	28	44	64	2
Fuel	32	34	33	28	45	65	1
Telephone	32	35	37	28	47	64	3
Restrooms	32	35	37	28	47	64	3
Pilot Shelter	32	35	37	28	47	64	3
Aircraft Maintenance	30	32	28	25	49	65	5
Aircraft Repair	30	32	28	25	49	65	5
Hangar	31	35	33	27	44	64	1

Most Tier 1 airports meet virtually all of the facility goals for basic pilot and aircraft services. Only at Tourism/Convention Center airports and Land Area Coverage airports are problems indicated. Compared to other facility goals, these deficiencies are comparatively modest.

Airport Zoning

Airports designated as Tier 1 in the state airport system should have a current airport zoning plan and an active airport zoning board.

Figure 14
1999 Facility Goal Achievement: Airport Zoning

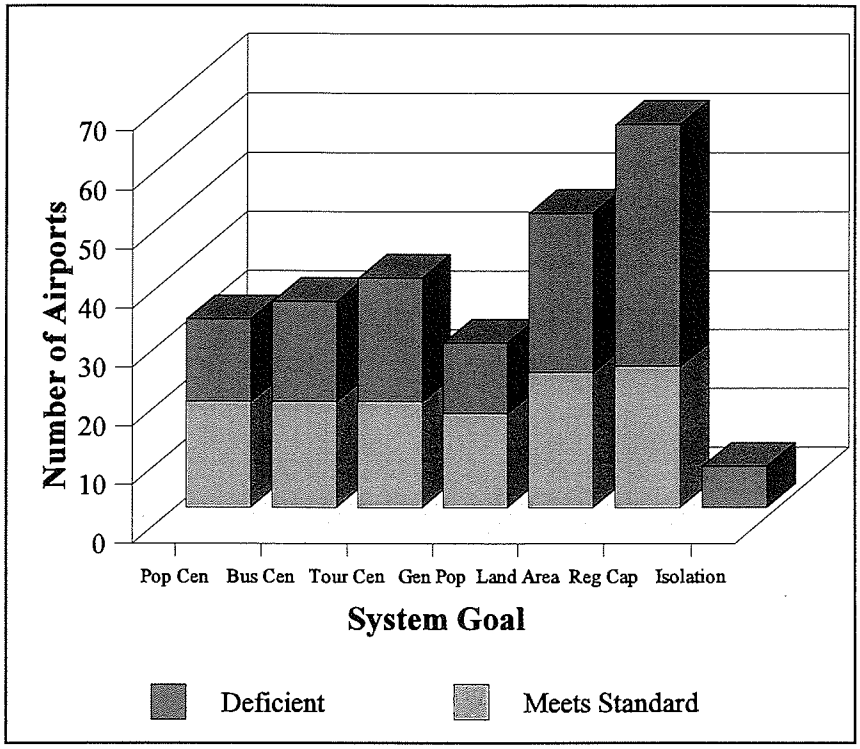


Table 49
1999 Facility Goal Achievement: Airport Zoning
Number of Tier 1 Airports Meeting the Facility Standard

Component	System Goal						
	Population Center	Business Center	Tourism Center	General Population	Land Area	Regional Capacity	Isolation
Number Tier 1 Airports	32	35	39	28	50	65	7
Active Zoning Board	18	18	18	16	23	24	0
Current Zoning Plan	22	22	21	19	27	29	0

Although these airports have had an opportunity to develop and maintain airport zoning and have an active zoning board for many years, comparatively few airport sponsors have taken advantage of this opportunity. In recent years, this has become a point of emphasis of the Michigan Aeronautics Commission (MAC). The MAC has approved in a number of instances AERO staff participation on airport zoning boards and has taken a greater interest in seeing that

effective local airport zoning is in place. As with the All Weather facility goal, this is a comparatively new initiative and will take a number of years to be completely responsive.

Miscellaneous Navigational Aids

Airports designated as Tier 1 in the state airport system should have appropriate navigational aids including Runway End Identifier Lights (REILs), a rotating beacon, segmented circle and lighted wind indicator.

Figure 15
1999 Facility Goal Achievement: Navigational Aids

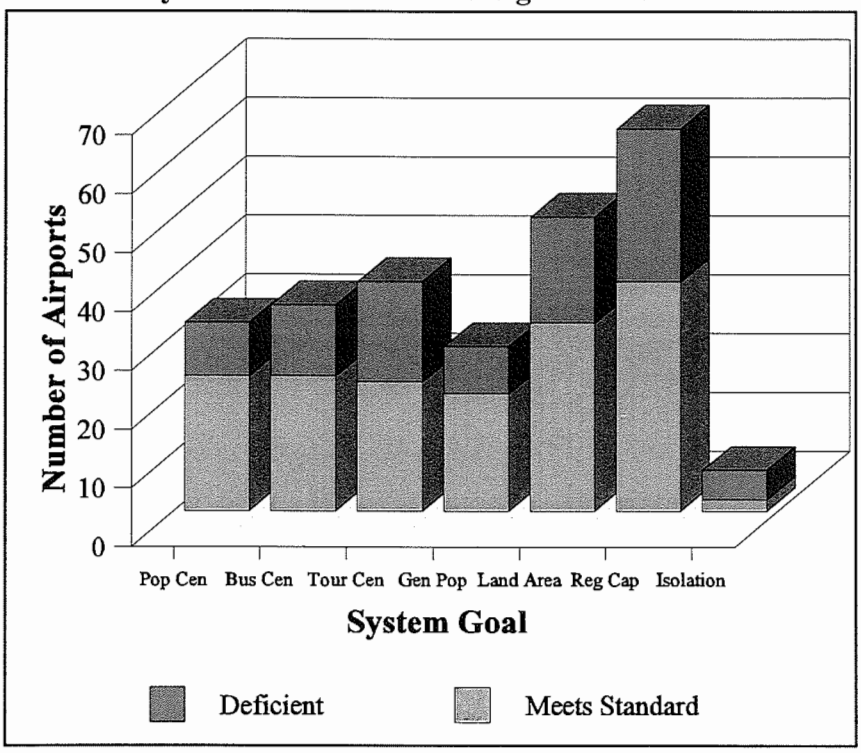


Table 50
1999 Facility Goal Achievement: Navigational Aids
Number of Tier 1 Airports Meeting the Facility Standard

Component	System Goal						
	Population Center	**Business Center**	**Tourism Center**	**General Population**	**Land Area**	**Regional Capacity**	**Isolation**
Number Tier 1 Airports	32	35	39	28	50	65	7
Runway End Indent Lights	32	34	33	27	42	53	2
Rotating Beacon	32	35	38	28	47	62	4
Segmented Circle	23	25	28	20	39	52	4
Lighted Wind Indicator	32	33	33	28	44	56	2

For the most part, Tier 1 airports have most of the navigational aids appropriate for their classification. The greatest number of deficiencies are found at the Land Area Coverage airports and the Regional Capacity airports.

Appropriate Instrument Approaches

Airports designated as Tier 1 in the state airport system should have the appropriate two-dimensional or three-dimensional instrument approach system that permits reliable air operations in minimal weather conditions. In recent years and in the future, these approach systems are anticipated to utilize either two-dimensional or three-dimensional Global Positioning System (GPS) technology.

Figure 16
1999 Facility Goal Achievement: Instrument Approaches

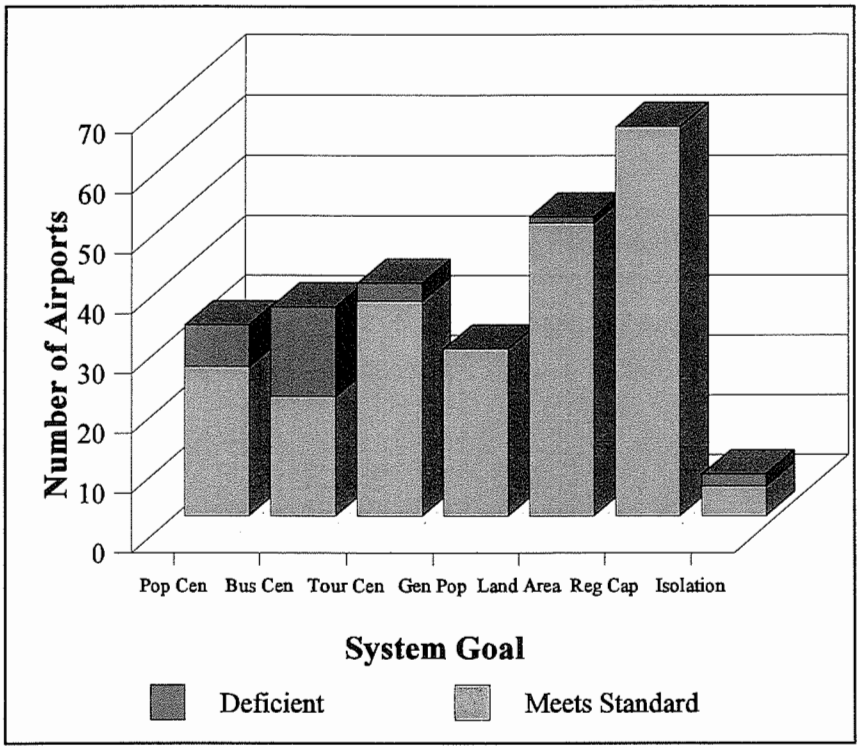


Table 51
1999 Facility Goal Achievement: Instrument Approaches
Number of Tier 1 Airports Meeting the Facility Standard

Component	System Goal						
	Population Center	Business Center	Tourism Center	General Population	Land Area	Regional Capacity	Isolation
Number Tier 1 Airports	32	35	39	28	50	65	7
Appropriate Instr Approach	25	20	36	28	49	65	5

Three dimensional precision approaches at Population Center and Business Center airports meet standards less than 75 percent of the time. The two dimensional non-precision approaches indicated at the other Tier 1 system airports are generally in place.

Appropriate Surface Access

Airports designated as Tier 1 in the state airport system should have appropriate highway and public transportation access responsive to both the volume and type of vehicular traffic requiring airport access.

Figure 17
1999 Facility Goal Achievement: Surface Access

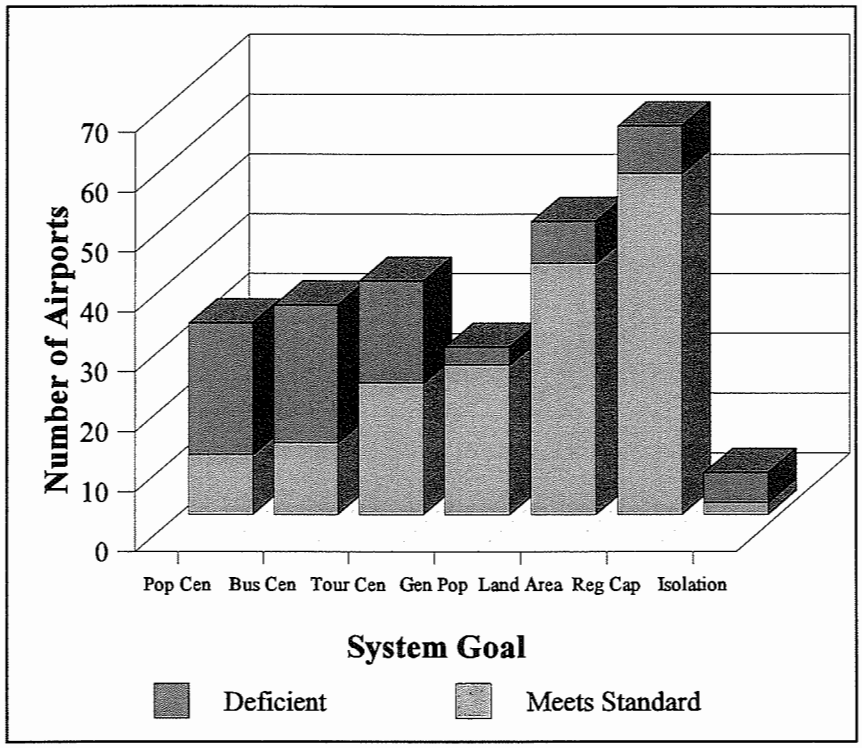


Table 52
1999 Facility Goal Achievement: Airport Surface Access
Number of Tier 1 Airports Meeting the Facility Standard

Component	System Goal						
	Population Center	Business Center	Tourism Center	General Population	Land Area	Regional Capacity	Isolation
Number Tier 1 Airports	32	35	39	28	50	65	7
Road Access	16	16	32	25	42	57	2
Public Transportation	21	25	38	28	49	65	5

The greatest deficiencies occur at population center and business center airports where both the highest level of highway access (arterials), and public transportation services are called for by airport

development standard.

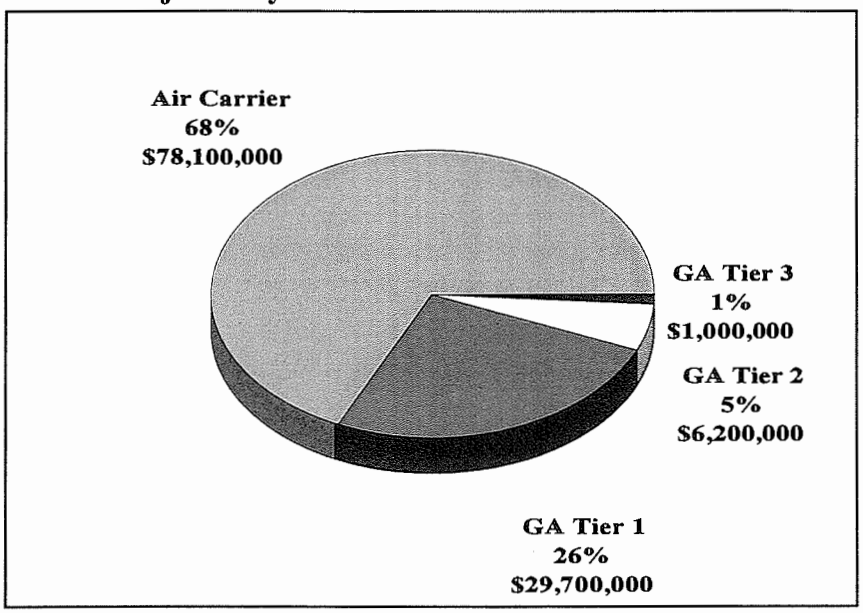
Projected System Needs

PROJECTED SYSTEM NEEDS

The cost of keeping Michigan's airport system running safely and efficiently, and developed to meet capital needs through 2020 is estimated at $2.3 billion. This figure includes anticipated capital improvements that have been historically funded through a combination of federal, state, and local sources. The cost of airport operations and maintenance are not included in this figure. The balance of this chapter will summarize capital needs for each airport tier and presents a breakdown by program category -- preserve, improve, expand.

Figure 18 displays the annual needs of the Michigan airport system by type of airport. Air carrier airports have approximately two thirds of the total system needs. General aviation airports in Tier 1 have about one fourth of the system needs. The remaining airports in Tier 2 and Tier 3 have about six percent of total system needs.

Figure 18
Annual Projected System Needs 2000-2020



Air Carrier Airports System Needs

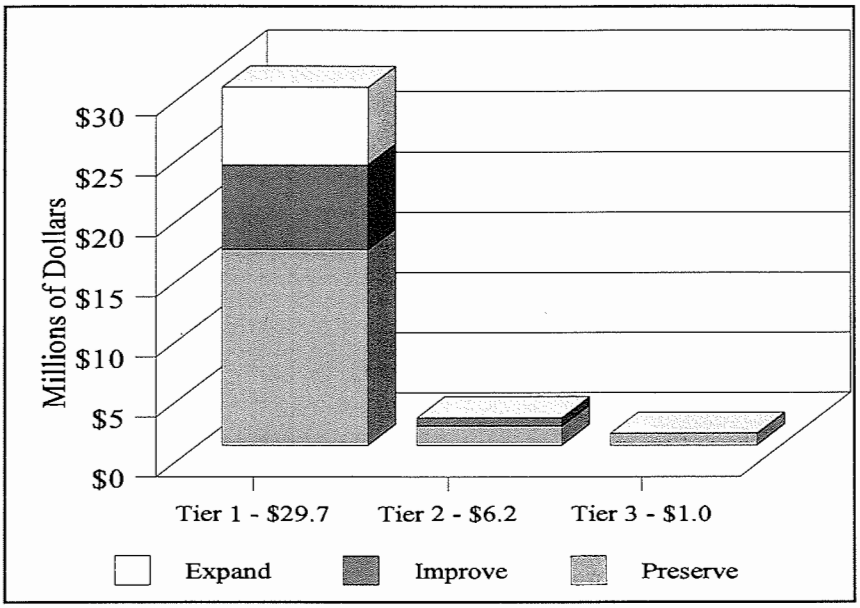
Annual needs at the air carrier airports in Michigan will average $78.1 million through 2020. Of this total, approximately $24.6 million will be needed each year for preservation of airport Michigan Airport System Plan. pavements, lighting systems and other airport infrastructure. The balance, $51.6 million will be needed each year for improvement projects including apron, taxiway, terminal, and other items essential to effective delivery of air carrier services.

General Aviation Airports System Needs

Annual needs at the ***MASP 2000*** general aviation airports average $36.9 million through 2020. Those general aviation airports in Tier 1 represent 80 percent of those needs. Tier 2 and Tier 3 airports have 17 percent and 3 percent of those needs respectively. More than half the total general aviation airport needs, $18.9 million annually, are for preservation of airport infrastructure including primarily airport pavements and lighting systems. Approximately $7.7 million is needed annually for airport improvement projects. These improve projects include those projects necessary to respond to current deficiencies at these airports. The remaining $10.3 million annual needs are for airport expansion projects . These expand projects are needed to respond to deficiencies at those airports that would be moving into a higher airport classification.

Figure 19

Annual General Aviation System Needs 2000-2020



Cost are presented in present day dollars and include construction and engineering dollars.

MASP Modification Process

MASP MODIFICATION PROCESS

One of the features of the ***MASP 2000*** is the ability to modify system recommendations to reflect changes in system goals, system standards, additions or deletions to the public use airport system, etc. A variety of analysis in the years ahead, some if quite logically unforseen, may necessitate changes to the ***MASP 2000.*** The purpose of this chapter is to indicate how formal changes to the MASP 2000 will occur.

Goals and Objectives

Any changes to MASP 2000 goals and objectives including new goals, or refocusing of goal emphasis will be undergo an analysis by the MDOT Bureaus of Transportation Planning and Aeronautics. These changes will require Michigan Aeronautics Commission approval.

Likewise, any changes to system standards including airport classification, service standards or performance target will require Michigan Aeronautics Commission approval.

Tier 1/Tier 2 Airport Designation

Designation of an airport into either Tier 1 or Tier 2, or movement of an airport from one tier to another tier requires Michigan Aeronautics Commission approval. Staff recommendations to the Commission will be based on criteria established for each system goal. From time to time, as more current data becomes available, or techniques improve, staff analysis may indicate a shift in select airport tier placement may be appropriate.

Tier 3 Airport Designation

All public use airports are included in the MASP 2000. Those facilities not included in either Tier 1 or Tier 2 are designated as Tier 3 airports. In any given year a number of airports may be added to the system or dropped form the system based on their current licensing designation. No formal action is required from the Michigan Aeronautics Commission regarding these airports. However, the Commission will be periodically advised of additions and deletions to the Tier 3 airport system.

Facility Goals

Any modifications to MASP 2000 facility goals will require Michigan Aeronautics Commission approval. Staff will report to Commission periodically on the number of airports meeting facility standards.

Glossary

GLOSSARY

This section defines the terms used in the ***MASP 2000*** and provides a list of acronyms used in the report.

Glossary

Air Carrier Airport - An airport that has regularly scheduled passenger service licensed by BUAER or certificated by FAA

Aircraft Operation - A aircraft takeoff or landing.

Airport Infrastructure - Any and all physical facilities of a given airport.

Airport Zoning - A zoning ordinance established in accordance with the Airport Zoning Act.

Apron - The portion of the runway system that is adjacent to the terminal building, for boarding the aircraft. A paved area of the airport used for the loading, unloading or parking of aircraft.

Arterial Road - A major road that carries automotive traffic through regions and cities.

Based Aircraft - The number of aircraft housed at an airport as reported through airport inspections. Normally designation as a based aircraft means that an aircraft is housed at an airport for at least six months in a year.

Collector Road - A road that carries intra-city traffic or carries traffic from local roads to arterials.

Endangered Airport - An airport that is in a situation of imminent

closure.

Heliport - A facility that allows for helicopter takeoff and landing.

Instrument Approaches - Instrument approach procedures established by the FAA for the purpose of accommodating aircraft arriving under instrument flight rules.

Itinerant Operation - An aircraft operation in which the aircraft departs from one airport and lands at a different airport.

General Aviation Airport - An airport established primarily for the accommodation of other than air carrier aircraft.

Local Operation - An aircraft operation in which the aircraft departs and returns to the same airport without an intermediate stop.

Local Road - A road that only carries traffic directly to and from a destination. There is very little through traffic on a local road.

Navigational Aid - A general term for all facilities that assist a pilot in operating an aircraft, such as runway lighting and other approach aids.

Parallel Taxiway - A taxiway that is placed beside and parallel to a runway allowing aircraft to taxi from one end of the runway to the other without being on the runway.

Primary Runway - The main runway in use at an airport. Generally, the longest and widest of the runways.

Segmented Circle - A navigational aid that indicates the runway alignment and any non standard traffic pattern in use at the airport. Normally contains a wind indicator.

Statewide Travel Demand Model - The Statewide travel Demand model is a tool to support the transportation planning process. It is a series of analytical techniques used to predict travel behavior and resulting demand on transportation facilities and services for a specific future time frame.

Common Acronyms

AERO	Bureau of Aeronautics, Michigan Department of Transportation.
AIMS	Aviation Information Management System.
ARC	Airport Reference Code (e.g. B-II)
AWOS	Automated Weather Observation System.
ASOS	Automated Surface Observation System.
BTP	Bureau of Transportation Planning, Michigan Department of Transportation
FAA	Federal Aviation Administration.
GIS	Geographic Information System
GPS	Global Positioning System
GCO	Ground Communication Outlet.
MCD	Minor Civil Division.
NPIAS	National Plan of Integrated Airport Systems.
PAPI	Precision Approach Path Indicator.
PCI	Pavement Condition Index.
REIL	Runway End Indicator Lights.
TAZ	Travel Analysis Zone.
TMS	Transportation Management System.
VASI	Visual Approach Slope Indicator.

Appendices

Appendix A:

Forecast of Based Aircraft

City	Airport	1998	2005	2010	2020
Ada	Somerville	3	4	5	7
Adrian	Lenawee County	61	62	63	66
Albion	Midway Airport	1	1	1	1
Allegan	Padgham Field	32	33	32	32
Alma	Gratiot Community	48	54	58	66
Alpena	Alpena Co. Regional	36	36	36	35
Alpena	Silver City Airpark	3	4	4	5
Ann Arbor	Ann Arbor Municipal	180	183	187	195
Athens	David's Field	6	6	5	5
Atlanta	Atlanta Municipal	8	8	7	6
Avoca	Rasor Field	5	7	8	10
Avoca	Tackaberry	1	1	2	2
Bad Axe	Engler Field	3	3	3	3
Bad Axe	Huron Co. Memorial	24	27	29	33
Baldwin	Baldwin Municipal	2	2	2	3
Bath	University Airpark	6	5	5	3
Battle Creek	W. K. Kellogg	95	94	94	93
Bay City	James Clements	90	101	108	123
Beaver Island	Beaver Is	4	5	5	5
Beaver Island	Welke	23	28	30	35
Bellaire	Antrim County	32	32	32	32
Belleville	Larsen Airpark	25	22	20	14
Benton Harbor	Southwest Michigan Regional	57	57	57	56
Berrien Springs	Andrews University	44	45	44	43
Big Rapids	Roben-Hood	10	11	11	13
Blissfield	Betz	12	11	9	7
Boyne City	Boyne City Municipal	11	13	13	14
Boyne Falls	Boyne Mountain	1	1	1	1
Brighton	Brighton Field	110	120	125	137
Brooklyn	Shamrock Field	7	6	6	4
Cadillac	Wexford County	40	40	40	39
Carleton	Wickenheiser	1	1	1	1
Caro	Caro Municipal	36	40	43	49
Carson City	Mayes	4	6	7	9
Charlevoix	Charlevoix Municipal	9	11	11	11
Charlotte	Fitch H. Beach Municipal	39	40	41	42
Charlotte	Wend Valley	4	4	3	2
Cheboygan	Cheboygan City-County	23	27	28	29
Cheboygan	Hoffman's Black Mountain	0	0	0	0
Chesaning	Howard Nixon Memorial	18	19	20	20
Clare	Clare Municipal	21	21	22	23
Clinton	Honey Acres	11	10	9	6
Clio	Cagney	4	4	4	4
Coldwater	Branch County Memorial	51	52	51	50
Croswell	Arnold Airfield	7	8	8	8
Crystal Falls	Iron County	7	9	10	12

Appendix A:

Forecast of Based Aircraft

City	Airport	1998	2005	2010	2020
Davison	Athelone Williams	4	4	4	4
Deckerville	Indian Creek Ranch	1	1	1	1
Detroit	Berz-Macomb	54	54	54	54
Detroit	Detroit City	271	270	269	267
Detroit	Detroit Metro Wayne County	81	80	80	79
Detroit	Grosse Ile Municipal	125	124	124	123
Detroit	Willow Run	222	220	219	217
DeWitt	Hoerner's Corners	0	0	0	0
Dexter	Cackleberry	11	10	9	6
Dowagiac	Dowagiac Municipal	34	34	34	34
Drummond Island	Drummond Island	16	21	23	28
East Jordan	East Jordan City	8	8	7	6
East Lansing	Davis	22	20	17	13
East Tawas	Iosco County	28	33	34	35
Eastport	Torchport	4	5	5	6
Eaton Rapids	Skyway Estates	16	14	13	9
Elk Rapids	Yuba	8	10	11	12
Elwell	Hamp Skyport	5	5	5	6
Empire	Empire	1	1	1	1
Erie	Erie Aerodrome	11	10	9	6
Escanaba	Delta County	42	42	41	41
Evart	Evart Municipal	2	2	2	2
Flint	Bishop Int'l	136	135	134	133
Flushing	Dalton	69	69	71	76
Fowlerville	Maple Grove	3	3	2	2
Frankenmuth	William 'Tiny' Zehnder Field	20	21	22	22
Frankfort	Dow Memorial	18	18	16	14
Fremont	Fremont Municipal	35	35	35	34
Fruitport	Flying A Ranch	10	14	17	22
Gaylord	Lakes of the North	3	4	4	4
Gaylord	Otsego County	45	45	45	44
Genesee	Duford Field	2	2	2	2
Gladstone	West Gladstone	6	5	5	3
Gladwin	Zettel Memorial	15	17	18	21
Grand Haven	Memorial Airpark	56	60	64	73
Grand Ledge	Abrams Municipal	78	79	81	85
Grand Marais	Grand Marais	1	1	1	1
Grand Rapids	Kent Co. Int'l	165	163	163	162
Grant	Grant	11	15	18	24
Grayling	Grayling Army Airfield	0	0	0	0
Greenville	Greenville Municipal	61	66	70	79
Gregory	Carriage Lane	2	2	2	1
Gregory	Richmond Field	3	3	2	2
Hale	Field of Dreams	1	1	1	2
Hancock	Houghton Co. Memorial	16	16	16	16
Harbor Springs	Harbor Springs Municipal	17	20	21	21

Appendix A:

Forecast of Based Aircraft

City	Airport	1998	2005	2010	2020
Harrietta	Bunch's Half Acre	0	0	0	0
Harrison	Clare County	7	7	7	8
Harrisville	Harrisville City	3	4	4	5
Harsens Island	Harsens Is.	3	4	5	6
Hart-Shelby	Oceana County	15	17	18	21
Hastings	Hastings/Barry County	29	30	29	29
Hessel	Albert J. Lindberg	6	8	9	11
Hillman	Hillman	5	5	5	4
Hillsdale	Hillsdale Municipal	24	24	25	26
Holland	Park Township	20	19	17	12
Holland	Tulip City	54	54	54	53
Houghton Heights	Houghton Lake State Airport	3	4	4	5
Houghton Lake	Roscommon County	16	19	19	20
Howell	Livingston County	144	147	150	156
Howell	Raether	2	2	2	1
Indian River	Calvin Campbell	5	5	5	4
Interlochen	Green Lake Township	4	5	5	6
Ionia	Ionia County	22	24	25	29
Iron Mountain	Ford	20	20	20	20
Ironwood	Gogebic-Iron County	9	9	9	9
Ishpeming	Edward F. Johnson	7	6	5	4
Jackson	Jackson Co.-Reynolds	103	103	102	102
Jenison	Riverview	57	65	70	81
Kalamazoo	Austin Lake	27	25	24	23
Kalamazoo	Kalamazoo/ Battle Creek Int'l	155	154	153	152
Kalamazoo	Newman's Airport	12	11	11	10
Kalkaska	Kalkaska	9	11	12	14
Kent City	Wilderness	4	4	3	2
Laingsburg	Dennis Farms	2	2	2	1
Lake City	Home Acres Sky Ranch	40	49	53	61
Lakeview	Lakeview-Griffith Field	34	39	42	48
Lambertville	Toledo Suburban	73	74	76	79
Lansing	Capital City	105	104	104	103
Lapeer	DuPont-Lapeer	37	37	38	41
Lewiston	Garland	0	0	0	0
Linden	Price's Airport	45	45	46	49
Lowell	Lowell City	25	28	31	35
Ludington	Mason County	33	39	40	42
Luzerne	Lost Creek	1	1	1	2
Mackinac Island	Mackinac Is.	3	4	4	5
Mancelona	Mancelona Municipal	1	1	1	2
Manchester	Rossettie	14	13	11	8
Manistee	Manistee Co.-Blacker	17	17	17	17
Manistique	Schoolcraft County	5	5	5	5
Marine City	Marine City	24	26	27	30
Marlette	Marlette Township	21	23	25	29

Appendix A:

Forecast of Based Aircraft

City	Airport	1998	2005	2010	2020
Marquette	Sawyer	9	46	46	45
Marshall	Brooks Field	45	46	45	44
Mason	Bergeon Field	7	6	6	4
Mason	Jewett Field	65	66	68	71
Mecosta	Canadian Lakes	4	6	7	9
Mecosta	Mecosta-Morton	1	1	2	2
Menominee	Menominee-Marinette	38	38	38	37
Midland	Jack Barstow	64	72	77	88
Mio	Oscoda County	0	0	0	0
Monroe	Custer	44	44	44	43
Moorestown	Moorestown Airpark	2	2	3	3
Mt. Pleasant	Mt. Pleasant Municipal	33	33	33	33
Munising	Hanley Field	6	5	5	3
Muskegon	Muskegon County	67	66	66	66
Napoleon	Day Field	7	6	6	4
Napoleon	Napoleon	28	25	22	16
Napoleon	Wolf Lake	0	0	0	0
New Haven	Macomb	61	65	69	77
New Hudson	New Hudson	126	135	143	159
New Lothrop	Bean Blossom	1	1	1	1
Newberry	Luce County	7	8	8	9
Niles	Jerry Tyler Memorial	42	43	42	41
Northport	Woolsey Memorial	9	11	12	14
Nunica	Hat Field	8	11	13	17
Nunica	Jablonski	5	7	8	11
Onaway	Leo E. Goetz County	3	3	3	2
Onondaga	Gorilla Aerodrome	0	0	0	0
Onsted	Loar'sField	10	9	8	6
Ontonagon	Ontonagon County	11	12	13	14
Oscoda	Wurtsmith	2	2	2	2
Owosso	Owosso Community	41	42	43	45
Parchment	Triple H	9	8	8	8
Paw Paw	Almena	10	9	9	9
Pellston	Pellston Regional of Emmet Co.	28	28	28	27
Petersburg	Gradolph	7	6	6	4
Pinconning	Gross	18	19	20	20
Plainwell	Plainwell Municipal	19	18	16	11
Plymouth	Canton-Plymouth-Mettetal	127	136	144	160
Pointe Aux Pins	Bois Blanc Is	3	3	2	2
Pontiac	Oakland/Pontiac	770	763	760	754
Port Austin	Grindstone Air Harbor	0	0	0	0
Port Huron	St. Clair Co Int'l	105	105	104	103
Pullman	Walle's Field	0	0	0	0
Reed City	Nartron Field	0	0	0	0
Rock	Bonnie Field	0	0	0	0
Rockford	Wells	2	3	3	4

Appendix A:

Forecast of Based Aircraft

City	Airport	1998	2005	2010	2020
Rogers City	Presque Isle County	3	3	3	2
Romeo	Romeo	93	93	93	93
Roscommon	Roscommon Conservation	13	13	12	10
Rothbury	Double J Resort	0	0	0	0
Saginaw	Harry W. Browne Int'l	65	65	64	64
Saginaw	M B S Int'l	27	27	27	26
Saint Helen	Saint Helen	1	1	1	2
Saint Ignace	Mackinac County	14	16	17	18
Saint Johns	Archer Field	3	3	2	2
Saint Johns	Glowacki	1	1	1	1
Saint Johns	Randolph's Landing Area	1	1	1	1
Saint Johns	Schiffer Acres	7	6	6	4
Saint Johns	Tripp Creek	3	3	2	2
Saline	Saline	0	0	0	0
Sandusky	Cowley Field	1	1	1	1
Sandusky	Sandusky City	18	18	19	20
Sault Ste. Marie	Chippewa Co. Int'l	10	10	10	10
Sault Ste. Marie	Sault Ste. Marie Municipal-Sanderson	15	15	15	15
Schoolcraft	Prairie Ronde	8	7	7	7
Sebewaing	Sebewaing Township	8	8	8	9
Sidnaw	Prickett Grooms Field	0	0	0	0
Smiths Creek	Johnson	2	3	3	4
South Haven	South Haven Area Regional	31	32	31	31
Sparta	Sparta	24	27	29	34
Stambaugh	Stambaugh	7	8	8	9
Standish	Standish Industrial	3	3	3	3
Stanwood	Cain Field	9	13	15	20
Sturgis	Kirsch Municipal	31	31	31	31
Sunfield	Hiram Cure Municipal	1	1	1	1
Tecumseh	Merillat	18	16	14	10
Tecumseh	Meyers-Diver's	21	23	24	26
Thompsonville	Thompsonville	4	5	5	6
Three Rivers	Three Rivers, Dr. Haines	35	36	35	34
Topinabee	Pbeaaye	11	13	15	17
Traverse City	Cherry Capital	98	97	97	96
Traverse City	Lake Ann Airway Estates	6	7	8	9
Traverse City	Sugar Loaf Resort	0	0	0	0
Troy	Oakland/Troy	119	127	135	150
Vassar	Vassar Field	2	2	2	2
Watervliet	Watervliet Municipal	0	0	0	0
Wayland	Cawkins	8	7	7	7
Weidman	Lake Isabella Airpark	10	10	10	11
Weidman	Ojibwa	4	4	4	4
West Branch	West Branch Community	19	19	19	19
Westphalia	Forest Hill	1	1	1	1
White Cloud	White Cloud	12	14	15	17

Appendix A:

Forecast of Based Aircraft

City	Airport	1998	2005	2010	2020
Williamston	Maidens	2	2	2	1
Winn	Woodruff Lake	17	18	18	19
Yale	Gavagan Field	1	1	1	1
Yale	Para Field	1	1	1	1
Yale	Yale	1	1	1	1
Zeeland	Ottawa Executive	45	51	55	64

Source: Michigan Department of Transportation **January, 2000**

Appendix B:

Operations Forecast

City	Airport	1998 Operations			2005 Operations			2010 Operations			2020 Operations		
		Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total
Ada	Somerville	150	150	300	170	180	350	180	190	370	200	210	410
Adrian	Lenawee County	28,450	4,500	32,950	29,500	7,100	36,600	30,800	10,100	40,900	33,400	16,000	49,400
Albion	Midway Airport	150	150	300	140	150	290	140	150	290	140	140	280
Allegan	Padgham Field	9,000	3,820	12,820	9,500	4,900	14,400	9,400	4,700	14,100	9,200	4,400	13,600
Alma	Gratiot Community	7,200	4,790	11,990	7,500	5,500	13,000	7,700	5,900	13,600	8,000	6,800	14,800
Alpena	Alpena Co. Regional	14,100	21,300	35,400	14,100	23,100	37,200	14,100	24,400	38,500	14,100	26,800	40,900
Alpena	Silver City Airpark	240	60	300	260	80	340	260	90	350	270	100	370
Ann Arbor	Ann Arbor Municipal	79,827	46,686	126,513	84,000	56,800	141,000	89,000	68,000	157,000	99,000	91,100	190,000
Athens	David's Field	1,000	1,000	2,000	950	960	1,910	950	960	1,910	950	950	1,900
Atlanta	Atlanta Municipal	570	850	1,420	650	940	1,590	650	930	1,580	640	920	1,560
Avoca	Rasor Field	170	170	340	160	160	320	150	160	310	140	140	280
Avoca	Tackaberry	310	310	620	290	290	580	280	280	560	260	260	520
Bad Axe	Engler Field	220	220	440	250	250	500	260	270	530	280	290	570
Bad Axe	Huron Co. Memorial	4,400	4,400	8,800	4,600	4,900	9,500	4,700	5,200	9,900	5,000	5,800	10,800
Baldwin	Baldwin Municipal	740	1,110	1,850	760	1,300	2,060	990	1,600	2,590	990	1,700	2,690
Bath	University Airpark	890	890	1,780	1,110	1,110	2,220	1,150	1,160	2,310	1,240	1,250	2,490
Battle Creek	W. K. Kellogg	43,246	55,317	98,563	43,200	60,800	104,000	43,200	63,800	107,000	43,200	70,800	114,000
Bay City	James Clements	22,400	5,700	28,100	23,100	7,300	30,400	23,500	8,300	31,800	24,400	10,200	34,600
Beaver Island	Beaver Is	320	2,800	3,120	380	3,100	3,480	670	3,700	4,370	730	3,800	4,530
Beaver Island	Welke	6,400	9,600	16,000	7,400	10,600	18,000	7,700	10,900	18,600	8,200	11,500	19,700
Bellaire	Antrim County	800	7,200	8,000	800	7,400	8,200	900	7,800	8,700	1,200	8,600	9,800
Belleville	Larsen Airpark	2,450	2,450	4,900	3,050	3,050	6,100	3,200	3,200	6,400	3,400	3,400	6,800
Benton Harbor	Southwest Michigan Regional	17,800	17,800	35,600	17,500	19,000	36,500	17,800	21,000	38,800	18,400	25,000	43,400
Berrien Springs	Andrews University	7,500	7,500	15,000	8,000	8,800	16,800	7,900	8,600	16,500	7,800	8,100	15,900
Big Rapids	Roben-Hood	1,110	2,590	3,700	1,320	3,200	4,520	1,460	3,500	4,960	1,700	4,100	5,800
Blissfield	Betz	1,060	1,060	2,120	1,320	1,320	2,640	1,370	1,380	2,750	1,480	1,480	2,960
Boyne City	Boyne City Municipal	2,240	3,340	5,580	2,400	3,800	6,200	2,900	4,900	7,800	3,000	5,100	8,100
Boyne Falls	Boyne Mountain	0	4,210	4,210	100	4,600	4,700	500	5,400	5,900	600	5,500	6,100
Brighton	Brighton Field	15,800	15,800	31,600	20,200	20,200	40,400	22,400	22,500	44,900	27,000	27,000	54,000
Brooklyn	Shamrock Field	1,850	1,850	3,700	2,300	2,310	4,610	2,400	2,400	4,800	2,600	2,600	5,200
Cadillac	Wexford County	8,800	8,800	17,600	8,900	9,200	18,100	9,100	10,100	19,200	9,600	11,900	21,500
Carleton	Wickenheiser	610	610	1,220	760	760	1,520	790	790	1,580	850	850	1,700
Caro	Caro Municipal	5,300	5,300	10,600	5,600	5,900	11,500	5,700	6,300	12,000	6,000	7,000	13,000

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Carson City	Mayes	330	330	660	390	390	780	410	410	820	440	450	890
Charlevoix	Charlevoix Municipal	1,998	1,998	3,996	2,160	2,300	4,460	2,500	3,100	5,600	2,500	3,300	5,800
Charlotte	Fitch H. Beach Municipal	6,700	4,440	11,140	7,100	5,300	12,400	7,500	6,300	13,800	8,400	8,300	16,700
Charlotte	Wend Valley	150	150	300	180	190	370	190	200	390	210	210	420
Cheboygan	Cheboygan City-County	4,910	3,270	8,180	5,200	3,900	9,100	5,900	5,500	11,400	6,000	5,900	11,900
Cheboygan	Hoffman's Black Mountain	150	150	300	170	170	340	170	180	350	180	190	370
Chesaning	Howard Nixon Memorial	1,860	1,860	3,720	2,130	2,130	4,260	2,220	2,220	4,440	2,390	2,400	4,790
Clare	Clare Municipal	3,610	3,610	7,220	4,850	4,850	9,700	5,600	5,600	11,200	7,000	7,100	14,100
Clinton	Honey Acres	2,910	2,910	5,820	3,600	3,600	7,200	3,750	3,750	7,500	4,050	4,050	8,100
Clio	Cagney	150	150	300	170	170	340	180	180	360	190	200	390
Coldwater	Branch County Memorial	15,200	1,020	16,220	15,800	2,400	18,200	15,700	2,100	17,800	15,500	1,700	17,200
Croswell	Arnold Airfield	710	110	820	770	170	940	790	190	980	830	230	1,060
Crystal Falls	Iron County	610	610	1,220	700	800	1,500	740	900	1,640	830	1,100	1,930
Davison	Athelone Williams	1,380	930	2,310	1,770	1,330	3,100	2,010	1,560	3,570	2,480	2,040	4,520
Deckerville	Indian Creek Ranch	150	150	300	170	170	340	180	180	360	190	200	390
Detroit	Berz-Macomb	26,400	17,500	43,900	29,100	23,900	53,000	29,100	23,900	53,000	29,100	23,900	53,000
Detroit	Detroit City	43,070	80,076	123,146	43,000	83,000	126,000	44,000	90,000	134,000	46,000	104,000	150,000
Detroit	Detroit Metro Wayne County	0	538,155	538,155	0	566,000	566,000	0	585,000	585,000	0	622,000	622,000
Detroit	Grosse Ile Municipal	24,000	36,000	60,000	24,400	37,600	62,000	25,000	40,000	65,000	26,600	46,400	73,000
Detroit	Willow Run	81,570	104,081	185,651	81,600	113,400	195,000	81,600	120,400	202,000	81,600	133,400	215,000
DeWitt	Hoerner's Corners	150	150	300	180	190	370	190	200	390	210	210	420
Dexter	Cackleberry	3,000	3,000	6,000	3,750	3,750	7,500	3,900	3,900	7,800	4,200	4,200	8,400
Dowagiac	Dowagiac Municipal	19,400	19,400	38,800	19,600	20,200	39,800	20,100	22,200	42,300	21,100	26,200	47,300
Drummond Island	Drummond Island	2,980	4,470	7,450	3,500	5,700	9,200	3,700	6,300	10,000	4,300	7,500	11,800
East Jordan	East Jordan City	1,500	1,500	3,000	1,680	1,690	3,370	1,670	1,680	3,350	1,650	1,650	3,300
East Lansing	Davis	2,500	2,500	5,000	3,100	3,100	6,200	3,250	3,250	6,500	3,500	3,500	7,000
East Tawas	Iosco County	2,500	2,500	5,000	2,700	2,900	5,600	3,100	3,900	7,000	3,200	4,100	7,300
Eastport	Torchport	510	510	1,020	570	580	1,150	590	600	1,190	630	630	1,260
Eaton Rapids	Skyway Estates	2,510	2,510	5,020	3,150	3,150	6,300	3,250	3,250	6,500	3,500	3,500	7,000
Elk Rapids	Yuba	760	1,140	1,900	880	1,260	2,140	910	1,300	2,210	980	1,360	2,340
Elwell	Hamp Skyport	1,280	1,280	2,560	1,460	1,470	2,930	1,530	1,530	3,060	1,650	1,650	3,300
Empire	Empire	1,530	660	2,190	1,660	800	2,460	1,650	790	2,440	1,640	770	2,410
Erie	Erie Aerodrome	550	2,170	2,720	880	2,510	3,390	950	2,580	3,530	1,090	2,710	3,800

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Escanaba	Delta County	18,900	18,900	37,800	18,900	20,900	39,800	18,900	22,200	41,100	18,900	24,800	43,700
Evart	Evart Municipal	330	490	820	380	540	920	370	540	910	370	530	900
Flint	Bishop Int'l	91,754	57,010	148,764	91,800	64,200	156,000	91,754	70,200	162,000	91,754	80,200	172,000
Flushing	Dalton	7,300	7,300	14,600	9,800	9,800	19,600	11,300	11,300	22,600	14,200	14,300	28,500
Fowlerville	Maple Grove	9,200	9,200	18,400	11,400	11,500	22,900	11,900	11,900	23,800	12,800	12,900	25,700
Frankenmuth	William 'Tiny' Zehnder Field	3,580	3,580	7,160	4,100	4,100	8,200	4,250	4,250	8,500	4,600	4,600	9,200
Frankfort	Dow Memorial	4,020	1,730	5,750	4,390	2,110	6,500	4,340	2,060	6,400	4,290	2,010	6,300
Fremont	Fremont Municipal	14,100	9,400	23,500	14,200	9,900	24,100	14,500	11,100	25,600	15,100	13,600	28,700
Fruitport	Flying A Ranch	340	500	840	410	580	990	440	600	1,040	480	650	1,130
Gaylord	Lakes of the North	1,070	1,610	2,680	1,190	1,800	2,990	1,350	2,400	3,750	1,390	2,500	3,890
Gaylord	Otsego County	2,180	8,800	10,980	2,300	9,000	11,300	2,000	10,000	12,000	2,400	11,000	13,400
Genesee	Duford Field	460	460	920	520	530	1,050	550	550	1,100	590	600	1,190
Gladstone	West Gladstone	230	230	460	240	240	480	250	250	500	280	280	560
Gladwin	Zettel Memorial	4,630	4,630	9,260	4,900	5,100	10,000	5,000	5,500	10,500	5,300	6,100	11,400
Grand Haven	Memorial Airpark	11,100	11,100	22,200	12,600	14,500	27,100	13,300	16,400	29,700	14,900	20,100	35,000
Grand Ledge	Abrams Municipal	28,400	22,400	50,800	30,000	26,000	56,000	32,100	30,900	63,000	36,000	40,000	76,000
Grand Marais	Grand Marais	290	1,170	1,460	310	1,200	1,510	360	1,240	1,600	450	1,330	1,780
Grand Rapids	Kent Co. Int'l	24,293	113,445	137,738	24,300	120,700	145,000	24,300	125,700	150,000	24,300	134,700	159,000
Grant	Grant	1,490	1,490	2,980	1,750	1,760	3,510	1,840	1,840	3,680	2,010	2,010	4,020
Grayling	Grayling Army Airfield	300	2,710	3,010	290	2,800	3,090	380	2,900	3,280	470	3,200	3,670
Greenville	Greenville Municipal	7,800	3,400	11,200	8,600	5,100	13,700	8,900	6,100	15,000	9,700	8,000	17,700
Gregory	Carriage Lane	150	150	300	180	190	370	190	200	390	210	210	420
Gregory	Richmond Field	4,050	1,080	5,130	4,680	1,720	6,400	4,780	1,820	6,600	5,100	2,120	7,200
Hale	Field of Dreams	210	320	530	240	360	600	250	370	620	270	380	650
Hancock	Houghton Co. Memorial	6,800	10,200	17,000	6,800	11,100	17,900	6,800	11,700	18,500	6,800	12,900	19,700
Harbor Springs	Harbor Springs Municipal	4,400	17,600	22,000	5,100	19,400	24,500	7,000	23,800	30,800	7,400	24,600	32,000
Harrietta	Bunch's Half Acre	150	150	300	170	170	340	170	180	350	180	190	370
Harrison	Clare County	1,100	1,640	2,740	1,560	2,110	3,670	1,840	2,390	4,230	2,410	2,950	5,360
Harrisville	Harrisville City	370	550	920	430	610	1,040	440	630	1,070	470	660	1,130
Harsens Island	Harsens Is.	150	150	300	140	140	280	130	140	270	120	130	250
Hart-Shelby	Oceana County	3,210	3,210	6,420	4,700	4,700	9,400	5,700	5,700	11,400	7,700	7,700	15,400
Hastings	Hastings/Barry County	7,320	3,140	10,460	7,700	4,000	11,700	7,600	3,900	11,500	7,500	3,600	11,100
Hessel	Albert J. Lindberg	560	850	1,410	630	1,100	1,730	700	1,200	1,900	830	1,400	2,230

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Hillman	Hillman	1,150	1,720	2,870	1,320	1,900	3,220	1,310	1,890	3,200	1,290	1,870	3,160
Hillsdale	Hillsdale Municipal	5,500	5,500	11,000	5,900	6,300	12,200	6,300	7,400	13,700	7,200	9,300	16,500
Holland	Park Township	3,560	3,560	7,120	3,500	3,500	7,000	3,350	3,350	6,700	3,000	3,000	6,000
Holland	Tulip City	30,500	20,000	50,500	31,000	21,000	52,000	31,000	24,000	55,000	32,000	30,000	62,000
Houghton Heights	Houghton Lake State Airport	740	1,120	1,860	860	1,240	2,100	890	1,270	2,160	950	1,340	2,290
Houghton Lake	Roscommon County	1,960	7,800	9,760	2,300	8,600	10,900	3,100	10,600	13,700	3,300	10,900	14,200
Howell	Livingston County	29,500	29,500	59,000	31,600	34,400	66,000	33,700	39,300	73,000	38,500	50,500	89,000
Howell	Raether	150	150	300	180	190	370	190	200	390	210	210	420
Indian River	Calvin Campbell	150	1,470	1,620	250	1,570	1,820	240	1,570	1,810	230	1,550	1,780
Interlochen	Green Lake Township	500	1,000	1,500	590	1,100	1,690	620	1,120	1,740	670	1,180	1,850
Ionia	Ionia County	21,300	21,300	42,600	24,100	27,900	52,000	25,600	31,400	57,000	28,600	38,400	67,000
Iron Mountain	Ford	11,300	7,500	18,800	11,300	8,500	19,800	11,300	9,100	20,400	11,300	10,400	21,700
Ironwood	Gogebic-Iron County	1,630	6,500	8,130	1,600	7,000	8,600	1,600	7,200	8,800	1,600	7,800	9,400
Ishpeming	Edward F. Johnson	340	490	830	350	510	860	380	530	910	430	580	1,010
Jackson	Jackson Co.-Reynolds	28,466	37,889	66,355	29,000	39,000	68,000	29,000	43,000	72,000	30,000	51,000	81,000
Jenison	Riverview	9,400	9,400	18,800	13,700	13,700	27,400	16,700	16,700	33,400	22,600	22,600	45,200
Kalamazoo	Austin Lake	300	300	600	280	290	570	280	290	570	280	290	570
Kalamazoo	Kalamazoo/ Battle Creek Int'l	37,750	61,023	98,773	37,800	66,200	104,000	37,800	69,200	107,000	37,800	76,200	114,000
Kalamazoo	Newman's Airport	1,930	1,930	3,860	1,840	1,850	3,690	1,840	1,840	3,680	1,830	1,830	3,660
Kalkaska	Kalkaska	460	1,080	1,540	560	1,180	1,740	580	1,210	1,790	640	1,260	1,900
Kent City	Wilderness	540	1,080	1,620	740	1,280	2,020	780	1,320	2,100	860	1,400	2,260
Laingsburg	Dennis Farms	150	150	300	180	190	370	190	200	390	210	210	420
Lake City	Home Acres Sky Ranch	5,200	7,700	12,900	6,000	8,500	14,500	6,200	8,800	15,000	6,700	9,200	15,900
Lakeview	Lakeview-Griffith Field	9,500	4,750	14,250	12,800	8,000	20,800	15,000	10,300	25,300	19,500	14,700	34,200
Lambertville	Toledo Suburban	21,300	8,100	29,400	22,300	10,400	32,700	23,400	13,100	36,500	25,700	18,400	44,100
Lansing	Capital City	33,552	86,108	119,660	33,600	92,400	126,000	33,600	96,400	130,000	33,600	104,400	138,000
Lapeer	DuPont-Lapeer	6,600	9,900	16,500	9,400	12,700	22,100	11,100	14,400	25,500	14,500	17,800	32,300
Lewiston	Garland	150	150	300	130	200	330	220	200	420	240	200	440
Linden	Price's Airport	14,200	14,200	28,400	19,000	19,100	38,100	21,900	22,000	43,900	27,700	27,800	55,500
Lowell	Lowell City	7,300	7,300	14,600	10,600	10,700	21,300	12,900	13,000	25,900	17,500	17,600	35,100
Ludington	Mason County	7,400	7,400	14,800	7,900	8,600	16,500	9,200	11,500	20,700	9,400	12,100	21,500
Luzerne	Lost Creek	0	190	190	10	200	210	10	210	220	20	210	230
Mackinac Island	Mackinac Is.	11,000	9,000	20,000	12,400	12,200	24,600	13,100	13,800	26,900	14,500	17,100	31,600

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Mancelona	Mancelona Municipal	150	150	300	170	170	340	170	180	350	180	190	370
Manchester	Rossettie	2,670	540	3,210	3,060	940	4,000	3,150	1,010	4,160	3,310	1,170	4,480
Manistee	Manistee Co.-Blacker	5,600	5,600	11,200	5,700	5,800	11,500	5,800	6,400	12,200	6,100	7,600	13,700
Manistique	Schoolcraft County	8,000	5,400	13,400	8,100	5,700	13,800	8,200	6,400	14,600	8,600	7,700	16,300
Marine City	Marine City	8,900	8,900	17,800	9,200	9,300	18,500	10,300	10,300	20,600	12,400	12,400	24,800
Marlette	Marlette Township	3,350	3,350	6,700	3,500	3,700	7,200	3,600	4,000	7,600	3,800	4,400	8,200
Marquette	Sawyer	1,000	1,000	2,000	1,000	41,800	42,800	1,000	43,200	44,200	1,000	46,100	47,100
Marshall	Brooks Field	12,700	12,700	25,400	13,600	14,900	28,500	13,500	14,500	28,000	13,100	13,800	26,900
Mason	Bergeon Field	280	280	560	350	350	700	360	370	730	390	390	780
Mason	Jewett Field	32,300	32,300	64,600	34,500	37,500	72,000	36,900	43,100	80,000	42,000	55,000	97,000
Mecosta	Canadian Lakes	440	440	880	520	520	1,040	540	550	1,090	590	600	1,190
Mecosta	Mecosta-Morton	0	510	510	40	560	600	60	570	630	90	600	690
Menominee	Menominee-Marinette	118	20,800	20,918	500	21,000	21,500	800	22,000	22,800	500	25,000	25,500
Midland	Jack Barstow	14,100	14,100	28,200	14,800	15,700	30,500	15,200	16,700	31,900	16,100	18,600	34,700
Mio	Oscoda County	190	280	470	220	310	530	230	320	550	240	340	580
Monroe	Custer	10,109	10,109	20,218	10,200	10,500	20,700	10,500	11,600	22,100	11,000	13,700	24,700
Moorestown	Moorestown Airpark	150	150	300	170	170	340	170	180	350	180	190	370
Mt. Pleasant	Mt. Pleasant Municipal	8,300	12,500	20,800	8,400	12,900	21,300	8,700	14,000	22,700	9,200	16,200	25,400
Munising	Hanley Field	1,800	1,800	3,600	1,860	1,870	3,730	1,970	1,980	3,950	2,190	2,200	4,390
Muskegon	Muskegon County	32,406	56,927	89,333	32,400	61,600	94,000	32,400	64,600	97,000	32,400	70,600	103,000
Napoleon	Day Field	150	150	300	180	190	370	190	200	390	210	210	420
Napoleon	Napoleon	3,240	3,240	6,480	4,050	4,050	8,100	4,200	4,200	8,400	4,550	4,550	9,100
Napoleon	Wolf Lake	150	150	300	180	190	370	190	200	390	210	210	420
New Haven	Macomb	5,300	2,200	7,500	5,500	2,350	7,800	5,900	2,800	8,700	6,800	3,700	10,500
New Hudson	New Hudson	20,000	20,000	40,000	20,700	20,800	41,500	23,100	23,200	46,300	28,000	28,000	56,000
New Lothrop	Bean Blossom	150	150	300	180	190	370	190	200	390	210	210	420
Newberry	Luce County	1,350	3,150	4,500	1,850	3,650	5,500	2,100	3,900	6,000	2,600	4,400	7,000
Niles	Jerry Tyler Memorial	5,700	2,440	8,140	6,000	3,100	9,100	6,000	3,000	9,000	5,800	2,800	8,600
Northport	Woolsey Memorial	310	470	780	360	520	880	370	540	910	400	560	960
Nunica	Hat Field	1,150	490	1,640	1,290	640	1,930	1,340	690	2,030	1,430	780	2,210
Nunica	Jablonski	330	330	660	390	390	780	410	410	820	440	450	890
Onaway	Leo E. Goetz County	450	670	1,120	520	740	1,260	510	740	1,250	500	730	1,230
Onondaga	Gorilla Aerodrome	150	150	300	180	190	370	190	200	390	210	210	420

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Operations Forecast

City	Airport	1998 Operations			2005 Operations			2010 Operations			2020 Operations		
		Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total
Onsted	Loar'sField	1,660	1,660	3,320	2,070	2,070	4,140	2,150	2,150	4,300	2,320	2,320	4,640
Ontonagon	Ontonagon County	1,070	1,600	2,670	1,360	1,900	3,260	1,520	2,050	3,570	1,820	2,360	4,180
Oscoda	Wurtsmith	2,240	3,350	5,590	2,200	3,700	5,900	2,200	3,900	6,100	2,200	4,300	6,500
Owosso	Owosso Community	7,600	11,400	19,000	8,200	12,900	21,100	9,000	14,600	23,600	10,400	18,100	28,500
Parchment	Triple H	150	150	300	140	150	290	140	150	290	140	140	280
Paw Paw	Almena	1,420	1,420	2,840	1,350	1,360	2,710	1,350	1,360	2,710	1,350	1,350	2,700
Pellston	Pellston Regional of Emmet Co.	5,700	22,400	28,100	5,700	23,900	29,600	5,700	24,800	30,500	5,700	26,800	32,500
Petersburg	Gradolph	760	760	1,520	940	950	1,890	980	990	1,970	1,060	1,060	2,120
Pinconning	Gross	4,060	4,060	8,120	4,650	4,650	9,300	4,850	4,850	9,700	5,200	5,300	10,500
Plainwell	Plainwell Municipal	3,680	5,500	9,180	3,600	5,500	9,100	3,400	5,200	8,600	3,000	4,800	7,800
Plymouth	Canton-Plymouth-Mettetal	41,400	41,400	82,800	43,000	43,000	86,000	48,000	48,000	96,000	58,000	58,000	116,000
Pointe Aux Pins	Bois Blanc Is	1,630	3,790	5,420	1,720	3,880	5,600	1,870	4,030	5,900	2,220	4,380	6,600
Pontiac	Oakland/Pontiac	160,153	171,864	332,017	160,000	189,000	349,000	160,000	201,000	361,000	160,000	224,000	384,000
Port Austin	Grindstone Air Harbor	150	150	300	170	170	340	180	180	360	190	200	390
Port Huron	St. Clair Co Int'l	19,300	29,000	48,300	19,000	31,000	50,000	20,000	33,000	53,000	20,000	39,000	59,000
Pullman	Walle's Field	150	150	300	140	150	290	140	150	290	140	140	280
Reed City	Nartron Field	0	150	150	10	160	170	10	160	170	10	160	170
Rock	Bonnie Field	50	40	90	50	40	90	50	50	100	60	50	110
Rockford	Wells	620	620	1,240	730	730	1,460	760	770	1,530	830	840	1,670
Rogers City	Presque Isle County	520	780	1,300	600	860	1,460	590	860	1,450	580	850	1,430
Romeo	Romeo	14,600	6,300	20,900	15,900	9,200	25,100	15,900	9,200	25,100	15,800	9,200	25,000
Roscommon	Roscommon Conservation	2,060	3,090	5,150	2,380	3,420	5,800	2,330	3,370	5,700	2,330	3,370	5,700
Rothbury	Double J Resort	150	150	300	170	180	350	180	190	370	200	210	410
Saginaw	Harry W. Browne Int'l	38,400	16,500	54,900	38,600	17,400	56,000	39,400	20,600	60,000	40,800	26,200	67,000
Saginaw	M B S Int'l	12,797	41,590	54,387	12,800	44,200	57,000	12,800	46,200	59,000	12,800	50,200	63,000
Saint Helen	Saint Helen	580	250	830	630	310	940	640	320	960	670	350	1,020
Saint Ignace	Mackinac County	2,100	18,900	21,000	4,400	21,300	25,700	5,600	22,500	28,100	8,000	24,900	32,900
Saint Johns	Archer Field	1,210	1,210	2,420	1,500	1,510	3,010	1,570	1,570	3,140	1,690	1,690	3,380
Saint Johns	Glowacki	150	150	300	180	190	370	190	200	390	210	210	420
Saint Johns	Randolph's Landing Area	150	150	300	180	190	370	190	200	390	210	210	420
Saint Johns	Schiffer Acres	7,400	7,400	14,800	9,200	9,200	18,400	9,600	9,600	19,200	10,300	10,400	20,700
Saint Johns	Tripp Creek	310	310	620	380	390	770	400	400	800	430	440	870
Saline	Saline	150	150	300	180	190	370	190	200	390	210	210	420

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		Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total
Sandusky	Cowley Field	150	150	300	170	170	340	180	180	360	190	200	390
Sandusky	Sandusky City	2,480	2,480	4,960	3,350	3,350	6,700	3,850	3,850	7,700	4,850	4,850	9,700
Sault Ste. Marie	Chippewa Co. Int'l	4,490	6,700	11,190	4,500	7,300	11,800	4,500	7,700	12,200	4,500	8,400	12,900
Sault Ste. Marie	Sault Ste. Marie Municipal-Sanderson	2,950	4,430	7,380	3,000	4,600	7,600	3,100	4,900	8,000	3,300	5,700	9,000
Schoolcraft	Prairie Ronde	150	150	300	140	150	290	140	150	290	140	140	280
Sebewaing	Sebewaing Township	3,010	3,010	6,020	4,050	4,050	8,100	4,650	4,650	9,300	5,900	5,900	11,800
Sidnaw	Prickett Grooms Field	150	150	300	150	160	310	160	170	330	180	190	370
Smiths Creek	Johnson	150	150	300	140	140	280	130	140	270	120	130	250
South Haven	South Haven Area Regional	9,800	9,800	19,600	10,500	11,500	22,000	10,400	11,200	21,600	10,100	10,600	20,700
Sparta	Sparta	3,100	5,900	9,000	5,100	8,000	13,100	6,600	9,400	16,000	9,400	12,200	21,600
Stambaugh	Stambaugh	2,460	270	2,730	2,770	570	3,340	2,920	730	3,650	3,230	1,040	4,270
Standish	Standish Industrial	990	1,470	2,460	1,410	1,890	3,300	1,660	2,140	3,800	2,160	2,650	4,810
Stanwood	Cain Field	150	150	300	170	180	350	180	190	370	200	210	410
Sturgis	Kirsch Municipal	2,400	9,400	11,800	2,500	9,600	12,100	2,600	10,300	12,900	2,900	11,500	14,400
Sunfield	Hiram Cure Municipal	150	150	300	180	190	370	190	200	390	210	210	420
Tecumseh	Merillat	1,590	1,590	3,180	1,980	1,980	3,960	2,060	2,060	4,120	2,220	2,220	4,440
Tecumseh	Meyers-Diver's	10,200	10,200	20,400	13,000	13,100	26,100	14,500	14,500	29,000	17,400	17,500	34,900
Thompsonville	Thompsonville	1,640	2,450	4,090	1,900	2,710	4,610	1,970	2,780	4,750	2,090	2,910	5,000
Three Rivers	Three Rivers, Dr. Haines	6,900	6,900	13,800	7,400	8,100	15,500	7,300	7,900	15,200	7,100	7,500	14,600
Topinabee	Pbeaaye	120	190	310	140	210	350	140	220	360	150	230	380
Traverse City	Cherry Capital	61,365	68,695	130,060	61,400	75,600	137,000	61,400	79,600	141,000	61,400	88,600	150,000
Traverse City	Lake Ann Airway Estates	150	150	300	170	170	340	170	180	350	180	190	370
Traverse City	Sugar Loaf Resort	1,140	1,710	2,850	1,310	1,890	3,200	1,300	1,880	3,180	1,280	1,860	3,140
Troy	Oakland/Troy	11,900	27,700	39,600	12,600	28,500	41,100	15,000	30,800	45,800	19,600	35,400	55,000
Vassar	Vassar Field	150	150	300	170	170	340	180	180	360	190	200	390
Watervliet	Watervliet Municipal	700	1,060	1,760	660	1,020	1,680	660	1,020	1,680	650	1,020	1,670
Wayland	Cawkins	1,650	1,060	2,710	1,590	1,000	2,590	1,580	1,000	2,580	1,580	990	2,570
Weidman	Lake Isabella Airpark	700	700	1,400	940	940	1,880	1,080	1,080	2,160	1,370	1,370	2,740
Weidman	Ojibwa	1,600	1,600	3,200	1,830	1,840	3,670	1,910	1,910	3,820	2,060	2,060	4,120
West Branch	West Branch Community	2,640	4,130	6,770	2,700	4,200	6,900	2,800	4,600	7,400	2,900	5,400	8,300
Westphalia	Forest Hill	150	150	300	180	190	370	190	200	390	210	210	420
White Cloud	White Cloud	2,110	2,110	4,220	3,100	3,100	6,200	3,750	3,750	7,500	5,050	5,050	10,100
Williamston	Maidens	150	150	300	180	190	370	190	200	390	210	210	420

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Winn	Woodruff Lake	960	960	1,920	1,100	1,100	2,200	1,140	1,150	2,290	1,230	1,240	2,470
Yale	Gavagan Field	150	150	300	170	170	340	180	180	360	190	200	390
Yale	Para Field	150	150	300	170	170	340	180	180	360	190	200	390
Yale	Yale	610	610	1,220	700	700	1,400	730	730	1,460	780	790	1,570
Zeeland	Ottawa Executive	7,000	10,500	17,500	11,000	14,500	25,500	13,800	17,300	31,100	19,300	22,800	42,100

Source: Michigan Department of Transportation

January, 2000